The Iconic Island For Renewable Energy

Socio-Economic-Gender Baseline Survey

JRI Research



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Socio-Economic-Gender Baseline Survey (Sumba Iconic Island)

Prepared for:



by:



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EXECUTIVE SUMMARY

Hivos has started an initiative to develop a showcase for a 100% renewable energy island in Indonesia, called 'Iconic Island'. **The aim of the initiative would be to completely end the dependence on fossil fuels of this island**, and to demonstrate and communicate the possibility thereof in the Netherlands as well as in Indonesia.

Sumba Island —an Island in East Nusa Tenggara Province, Indonesia, with total areas of 11,153 sqkm, and population of 685,131 (2010), and one of the poorer islands of Indonesia— has been settled as an 'Iconic Island'. Currently in Sumba Island, electricity consumption is relatively low –only about 8 megawatt and merely used for lightings purposes. Low consumption of electricity by households in Sumba Island is caused by low electricity supply from PLN. Lack of electricity supply, eventually, affect to the capability of the government and people in Sumba Island to drive up higher economic activities in the island. On the other hand, potential sources of renewable energies in Sumba Island are quite abundant, consisting of solar energy, wind energy, water, biofuel and biogas; and it is estimated that the renewable energy sources will be enough for meeting the need of electricity energy in the Island. Unfortunately, they are not utilized maximally yet because the infrastructures presence for producing renewable energy is still limited.

The main purpose of Sumba Iconic Island initiative is to encourage government, private sector and international institutions in realizing the development of infrastructure to generate renewable energy which is sufficient for the needs of Sumba Island's people. By enhancing people's access to renewable energy, is expected to bring positive effect to socio-economic and gender aspects among Sumba Island people. To be able to assess these results in the future, the baseline survey was conducted.

This socio economic and gender baseline survey was conducted in two different times. The first survey conducted at the end of April until May 2012 towards 312 households. The second survey conducted at the end of November until December 2012 towards 268 respondent. Total number of respondents per district is determined proportionally toward total population of Sumba Island; the selection of sampling area was conducted through cluster random sampling – with the village as primary sampling unit. Based on the assumption that access to electricity affects the socio-economic and gender aspects, so the clustering is based on the electrification ratio¹ of villages within respective districts. For the second survey, booster sampling also used for getting additional 61 households of SEHEN user, in order to have sufficient sample for knowing people satisfaction/dissatisfaction toward SEHEN

Results of the baseline survey are as follows:

¹ Data electrification ratio of village is obtained from Winrock –2010's data.

No	Subject	Findings				
	Occupation of male – first & second occupation					
	Farmer, livestock farmer (independent)	90%				
	Other occupation, independent	8%				
1	Other occupation, dependent	16%				
	Civil servant	6%				
	Civil servant - retired	1%				
	Occupation of female – first & second occupation					
	Earmer livestock farmer (independent)	41%				
	Other occupation independent	6%				
2	Other occupation, independent	2%				
2		2%				
		370				
	Onpaid family worker	43%				
		67%				
		8%				
	primary school	17%				
	senior high school	17 %				
	vocational training	2%				
3	university	4%				
Ū	Level of education of Female					
	Illiterate	11%				
	primary school	54%				
	junior high school	18%				
	senior high school	12%				
	vocational training	2%				
	university	3%				
	Condition of house – housing materials					
	Walls : bamboo, wood or coconut stem	80%				
	Roof : coarse grass + palm leaves	36%				
4	Flooring materials : Earth	11%				
	Flooring materials : Bamboo	47%				
	Window : - not fitted with glass	83%				
	Ownership documentation of houses					
_	Certified – proprietary right	46%				
5	Ownership documentation of the farming land					
	Certified – proprietary right	51%				
	Total household income per year (from all source of income)- wi average member of household is 5.7	th				
e	Quartile1 (IDR)	751,500				
б	Median (IDR)	2,700,000				
	Quartile 3 (IDR)	9,237,500				
	Average income (IDR)	9,385,878				

No	Subject	Findings								
	Average household income – based on group of community (IDR)									
	Maramba (noble class	15,368,199								
	Kabisu (religious figures)	6,421,904								
	Ata (the masses)	7,029,580								
	 Anak belis (slave – lowest caste in Sumba's society) 	5,198,333								
	Non native	33,796,129								
	Total household income per year from agriculture sector ² – with average member of household is 5.7									
	Quartile1 (IDR)	0								
	Median (IDR)	800,000								
	Quartile 3 (IDR)	1,750,000								
	Average income (IDR)	1,596,333								
	Total household income per year from husbandry sector ³ – with average member of household is 5.7									
	Quartile1 (IDR)	0								
	Median (IDR)	0								
	Quartile 3 (IDR)	500,000								
	Average income (IDR)	1,000,484								
	Household average expense per year (IDR) ⁴									
	Food	5,145,996								
	Schooling expenses	2,294,423								
	Cigarettes	1,829,942								
	Traditional ceremonies (excluding cattle for slaughtering)	1,493,461								
7	Transportation	1,281,857								
	Water	1,155,003								
	Sirih Pinang	902,850								
	Telecommunication	884,969								
	Medical expenses	743,925								
	Clothes	603,520								
	Source of water									
8	Fetching from outside their houses	84%								
	 % of HH who face difficulty in finding water within past one year 	45%								
	Family nutrition									
0	Have a meal in the morning	55%								
9	Have a meal at noon	94%								
	Have a meal in the afternoon/evening	100%								
	Sanitation									
	Domestic latrine with protected/covered septic tank	43%								
10	Defecating at open land/vard	41%								
	Public latrine with waste canal to fishpond drain	1.3%								
	Kitchen walls - clean	2004								
L		2070								

 ² Based on those who are as a farmer.
 ³ Based on those who have livestock
 ⁴ The expenditure is calculated based on those who have an expense for respective items

No	Subject	Findings
	Kitchen ventilation – good/very good	28%
	Kitchen equipment - clean	29%
	Water tank - clean	21%
	Mosquito – none	1%
	Trash – none	3%
	Dung pile – none	14%
	Prevalence of some health problem during last 1 year, among males / females / children \leq 13 y.o	
		Males/females/chil dren (%)
	Headache	100 / 78 / 34
	Cough	67 /63 / 46
	Malaria	62 /64 /51
11	Eye redness	21 /23 /18
	Breathing difficulties	15 /13 /8
	Diarrhea	14 /15 /21
	Eye infection	10 /9 /8
	Fire related accident	2 /2 /3
	Dengue	2 /2 /3
	Tuberculosis	1 /1 /1
	Division of works in family among males / females / boys \leq 13 y.o/girls \leq	<u><</u> 13 y.o
		Males/females/boy s/girls (%)
	Raising big cattle (e.g.: horse, cow, etc)	32 / 7 / 2 / 0
	Raising small cattle (.g.: pig, poultry)	47 / 78 / 5 / 6
	Fetching water	48 / 76 / 12 / 14
	 Collecting dung⁵ 	23 / 20 / 3 / 2
12	Collecting fodder/grass	39 / 33 / 5 / 3
	Collecting firewood	73 / 66 / 10 / 10
	Cooking	14 / 97 / 2 / 7
	Washing utensils	4 / 93 / 2 / 7
	Cleaning the bathroom	6 /12 / 1 /2
	Involvement for children education	39 /62 /NA/NA
	Studying again at home	NA/ NA /36 / 37
	% of female who owned the valuable assets in the family (separated fro	m male)
	House	5%
	Farming land	4%
13	Livestock (excluding poultry)	4%
	Poultry	4%
	Motor cycle	1%
	• Car	0%

⁵ Collecting dung activity, mostly with the purpose for cleaning the environment.

No	Subject	Findings
	% of female who have an authority in decision making process within need an approval from male)	n the household (no
	Daily consumption expenditure	51%
	Selection of energy used	13%
	Children education	8%
1/	The use of agriculture/husbandry results	9%
14	Determining the sales price of agriculture/husbandry results	8%
	Purchasing livestock/ cattle	7%
	Purchasing land / house	5%
	 Purchasing expensive goods (e.g. : TV, motorcycle, electronic goods) 	5%
	% of female who ever involve in community activities within past 1 y	ear
	Attending a meeting at village/kelurahan	58%
15	Attending a meeting at RT/RW	53%
	 Attending religious meeting (excluding the routine worship) 	56%
	Attending traditional/cultural ceremony	71%
	Practices in agricultural farming and husbandry	
	Do farming on their own lands	93%
	The non cultivated land (sqm)	
	a. Median (sqm)	0
	b. Quartile 3 (sqm)	5000
	c. Maximum (sqm)	100,000
	Selling the cultivated crops – in non transformed way	28%
	Selling the cultivated crops – in transformed way	28%
	 Selling the cultivated crops – in transformed & non transformed way 	30%
	Do not selling any of their cultivated crops	13%
	Earn income from livestock (among livestock farmers)	39%
16	Zero grazing / stabling only at night - for :	
	a. Pig	76% / 12%
	b. Goat/sheep	18% / 69%
	c. Horse	25% / 45%%
	d. Cow	17% / 26%
	e. Buffalo	22% / 52%
	Willingness to stable livestock (for those who are not stabling their livestock)	62%
	Use the dung for fertilizer	
	a. Pig	34%
	b. Goat/sheep	50%
	c. Horse	30%
	d. Cow	25%

	e. Buffalo	33%					
	% of household who use the entire harvested food corps (corn, rice and or cassava) for their own consumption only – have no spare to sold ⁶						
17	Corn	89%					
	Rice	85%					
	Cassava	91%					
	Electricity						
	Have no electricity source at all	40%					
	Reason for not having any of electricity source						
	 Cannot afford to have 	70%					
	o There is no electricity network	28%					
	Have no electric appliance at all	51%					
	Using electric appliance for productive work	0%					
	PLN Electricity – on grid	25%					
	Sehen users	21%					
	Damage SEHEN	0.4%					
	% of those who are interested to have SEHEN – among those who are aware of SEHEN and do not connected to PLN	89%					
	Have no money, because it has to be paid for the next 6 months in advance, as the reason for do not use SEHEN although interested to have	86%					
18	 % of those who aware SEHEN among target user of SEHEN⁷ 	67%					
	Habits and attitudes toward SEHEN – among SEHEN users						
	% satisfy with SEHEN (from total SEHEN users)	82%					
	 The use is limited – as the reason for dissatisfaction 	64%					
	Paid fully in cash at front for SEHEN (among SEHEN users)	52%					
	SEHEN is good value for money (among SEHEN users)	60%					
	 Those who are knowing on what things to do if SEHEN equipment is out of order 	66%					
	Never having a problem when using SEHEN	77%					
	Problems in using SEHEN						
	 Can not charge when cloudy (lack of sunlight) 	5%					
	 Run out easily – can not store enough electricity for more than 1 lamp 	5%					
	 Light from the lamp is less bright 	3%					
	Optimum rental price for 2 lighting facility – per week (IDR)	5,000					
	The use of lamps						
40	Traditional tin lamp	51%					
19	Energy saver	42%					
	Electric bulb	20%					

 ⁶ Percentage is calculated from those who plant (respected plant), not from the total sample of respondents.
 ⁷ Target users of SEHEN are those who are not using PLN on grid connection or SEHEN

No	Subject	Findings			
	The use of stove for cooking				
00	Open fire - firewood	98%			
20	a. Usage average per day (kg)	12.1			
	Kerosene stove	9%			
21	% of households who use kerosene – mostly for lighting purpose	65%			
	% of households who use firewood	98%			
	Source of firewood				
	Own yards /farm	85%			
	Community forest	20%			
22	Other people's land/farm	12%			
22	Purchase it	3%			
	Ways of collection (for those who collect by their own)				
	From picking up dried branches	97%			
	From cutting trees	3%			
	Spending for energy per month (IDR)				
00	Electricity – PLN connecting grid	58,851			
23	SEHEN	26,418			
	Other energy source (excluding electricity) – total	39,521			
	Credit experience within past 1 year				
	Do not have any credit	58%			
	Have any credit to relative or friend	20%			
24	Have any credit to rentenir (loan shark)	6%			
	Have any credit to bank	5%			
	Have any credit to cooperative	5%			

LESSON LEARNED

a. Social economic condition

- The caste system in Sumba Island create big gap in land ownership and income. Standard of living
 of most people from the low caste in Sumba Island (*Ata & anak belis*) is very low, as reflected from
 condition of their house and family income. These poor groups tend to be taken out from the
 decision making process at village level or in tradition practices. They tend to be only as the
 listeners.
- 2. Non-native families, who generally are not from Sumba Island, own higher household income than the native people.
- 3. Almost all of the family are farmer or livestock farmer (96%), but some of them could not generate income from their farming activities :
 - 13% of farmer families, do not generate any income from their farming activities.
 - Among people who plant food crops (i.e : corn, rice, and cassava), almost all of them using it just for their own consumption.
 - o Cashew nut, candlenut, and coffee are the most valuable crops for people of Sumba Island.
 - Only 39% of farmer families can earn additional income from the livestock they raise; because the livestock are intended more for traditional ceremonies.
- 4. Expense for cigarette, traditional ceremonies and transportation seize large portion of budget of households in Sumba Island.
- 5. Owning a cellular phone becomes a trend for people in Sumba Island. This makes half of households in Sumba Island having cellular phone, with average expense for communication using cellular phone is IDR 884,696 per year.
- 6. Status of ownership of their houses and agricultural lands become basic issue faced by people in Sumba Island; half of sample households in this study do not have legitimate documents (certificates) for their properties like houses and agricultural lands.

b. Habits & practices in agriculture and husbandry

 The common practice to intensively raise and keep farm animals (namely: by specifically providing foods and drinks for the animals) is only in the raising of pigs. Therefore, stabling a farm animal all day and night is only for pig farming. Moreover, pigs are also the most raised animals, due to its important function in traditional ceremonies.

- 2. For those not stabling their animals, the idea to stable big animals like buffalo, cow, horse, goat/sheep for some of them is still considered as not attractive. They believe that the stabling will only become new burden, because they have to provide foods and water for the stabled animals.
- 3. There are still farming lands that are not yet maximally cultivated, because almost half of farmers tend to abandon some of their lands or not cultivated all of their lands; with the abandoned areas among 25% of farmers is ranging from 5,000 to 100,000 sqm.
- 4. Farmers in Sumba Island, particularly in East and Center Sumba, are generally not accustomed to use fertilizer in their farming. It is why that the use of dung for fertilizer is still low in the island. Generally, the people only use dung from goats as fertilizer, meanwhile dung from other animals, including pig, are left where it is and not utilized as fertilizer.

c. Nutrition condition, sanitation & hygiene

- 1. Livestock is utilized more for traditional ceremonies; whereas menu for the households is very simple, generally only consisting of carbohydrates, without meat and vegetable.
- 2. Condition of sanitation and hygiene of Sumba people is also poor. It is as reflected from poor condition of their kitchen, water tank and their surrounding environment; and it is still a habit for 41% of Sumba people to defecate in an open field (backyard).
- 3. Prevalence of headache, respiratory disease, malaria, diarrheas, and tuberculosis among member of families is quite high. In fact, prevalence of tuberculosis disease is higher (1%), than the average prevalence rate in the country, which according to 2007's data, is only at 0.4%

d. Gender Equality

- 1. There is specific division of role in raising and keeping farm animals between male and female in a family. Big animals like cows, horse, and buffalos are generally raised and taken care by adult male, meanwhile small animals like pig, and poultry, are generally raised by adult female.
- 2. Fetching water, cooking meals, and washing utensils become responsibility of female. Meanwhile collecting the firewood becomes responsibility of both male and female.
- 3. Generally, although valuable assets belonged to households are jointly owned by both husband and wife, but there is a tendency that the male/husband has higher access to the asset ownership than the female/wife.
- 4. Dominant role of female in decision-making process is only relating to allocation of daily consumption expenditure of the family. For other important aspects of the family, such as selection of energy used, children education, the use of agriculture/husbandry results, etc., the decision is generally set collectively by husband and wife; but still it appears that husband (male) tends more dominant than his wife (female), particularly in determining the sales prices of agricultural/husbandry results, purchasing livestock, purchasing a land/house and other expensive goods.

5. From the qualitative survey, it reveals that status of unmarried women and widows is low in the community, particularly in traditional ceremony events.

e. Energy Usage

- Forty percent (40%) of the total sample households do not have access to any electricity energy source at all, either in form of connecting grid to PLN, SEHEN, SHS or Diesel Generator. Yet, number of those who use traditional lamp is bigger than 40%, namely 51%. This means that for 11% households who have access to any electricity energy source, still use kerosene traditional tin lamps because the electricity power that they can use is not sufficient for all the needs of lighting they need..
- Penetration level of SEHEN among households in Sumba Island, is quite similar with PLN on grid connection (21% and 25%, respectively). Given the population distribution on the Sumba island - a lot of them are living in areas with a dispersed geographical conditions or in remote areas, in the near future time, SEHEN will rise more quickly than PLN..
- 3. While most users are satisfied in using SEHEN, but compared to the price to be paid; only 60% who consider that SEHEN have a price commensurate with the quality/quantity of lighting (good value for money). There is also a strong indication that on the technical assistance, SEHEN still needs to improve. 34% of the users do not know what to do if their SEHEN equipment is out of order; 2 units of SEHEN found in unusable condition, but no effort to fix it.
- 4. Main barrier to increase the penetration level of SEHEN in Sumba Island are as follow :
 - The awareness level towards the availability of SEHEN among target users is still not sufficient yet (60%).
 - Purchase power among most people in Sumba Island is generally very limited; so having to pay upfront for the next 6 months usage to use SEHEN, is the most important barrier. Even for the rental price of IDR 5,000 per week; is still considered not to be affordable by 35% of target users.
- 5. Almost all households in Sumba Island use open fire for cooking purpose (98%).Open fire stove, is the most inefficient fuelwood stove. With its very simple three stone construction, then there is a lot of heat energy is wasted; unfocused utilized for cooking or heating food. Very far different with permanent stove used by people in East Java Therefore, although the menu they cook is very simple, the consumption of firewood per day is quite high, namely about 12.1 kg on average. Open fire with firewood is also used for cooking pig feeds.
- Generally, firewood is collected by cutting dried trees/branches (97%) from their own yards (85%), community forests (20%) or from other people's land/farm (12%).
- 7. Kerosene is still significantly used (65%); generally for the lighting purpose (51%), and only 9% households who use kerosene for cooking purpose.

CONCLUSION

Demand for electricity among people in Sumba Island is very high, because almost half of households does not access to any of form of electricity; and some of those who already have access to electricity energy (solar home systems. SEHEN, even PLN) still need kerosene traditional tin lamps for their lighting purposes, because the electricity power that they can use is not sufficient for all the needs of lighting they need.

The most important barrier to increase energy access is the low purchase power of the people; which is worsened by their habit in spending money for non-productive activities, such as buying cigarette, traditional ceremonies and *sirih pinang⁸* - with unreasonable amount if compared to their total income or other essential expenditure like for food and education.

The problems related with SEHEN are: (1) inadequate awareness among the people in remote areas of Sumba Island toward the existence of Sehen, (2) the upfront payment system that makes SEHEN unaffordable, and (3) inadequate awareness about things to do when experiencing technical problems in the use of SEHEN and insufficient systems for repair due to difficult geographical conditions - a lot of residential location are located in remote places that are difficult to reach the nearest repair places.

Particularly for the development of Biogas as alternative energy source, there are still large barriers, because:

- The people's energy consumption is still focusing on meeting their lighting need.
- Firewood as the source of energy for cooking purposes can still be easily collected, around their houses or house yards, and it is also quite abundant.
- Habit to stable farm animals is still low. Difficulty to find water, whereas on the other side, area of savanna for grazing the farm animals is still available. These factors are the main barrier to ask the farmers to stable their animals.
- Generally, agricultural farming is not intensive; and habit to use animal dung as fertilizer is also low.

It appears that pig farming could have best potential for developing biogas program in Sumba, because:

- Pigs, habitually, are stabled near the household's house.
- Pigs are animals that get special attention from the farmer (e.g.: provided with cooked feeds, and waters).

⁸ *Sirih pinang* is a common habit practiced by many people in Sumba Island by chewing *daun sirih* (*piper bettle*) and pinang (*Areca catechu L/betel nut.*) mixed with *gambir* (*Uncaria gambir* Roxb/ betel bite) and kapur (lime stone)

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 Pigs are not only a social cultural asset – as symbol of social status, and for traditional ceremonies– but are also has high economical value (pigs can easily reach the worth-to-sale weight in only short time, compared with cows).

Although the production of food corps tend to be just enough for meeting consumption of the family, there could still be an opportunity to cultivate crops for biofuel as alternative energy source, because there are still farming lands that are not yet maximally cultivated (25% farmers tend to abandon their lands; with the abandoned areas ranging from 2,500 to 100,000 sqm)

The caste system could, on the one hand, hinder the development of people in Sumba Island, since the system tend to marginalize the low caste from the decision making process. On the other hand, the caste system could also facilitate the implementation of intervention programs, if the higher castes (Maramba & Rato) fully supports the program.

RECOMMENDATION

Programme for increased access to energy in Sumba Island should be designed to provide cheap/low cost energy, due to the low purchase power of the people.

To reach high penetration of SEHEN (solar panel energy) at Sumba, there should be changes onto the payment system and distribution. Upfront payment systems for use the next 6 months should be replaced with much lighter installment system or lease, i.e : a maximum of IDR 5,000 per week.

For distribution of SEHEN, it could use the existing stores in each village as a point of purchase/lease. The better distribution system will not only increase public's awareness toward SEHEN, but also improve access to SEHEN. Make it more easy and affordable.

However, it must also be accompanied by adequate technical support by PLN and/or distributor. This is very relevant for encouraging the villagers / local people for setting up technical-support business units in their villages. Here, it will need training program to support them setting up the new business.

To increase participation of people in Sumba Island in the development and operation of other renewable energy systems like biofuels and biogas, a programme should be conducted to increase the awareness towards the benefits of using these renewable energies systems for their quality of life and/or for increasing their family income, such as :

- 1. Socialization about benefits of animal dung for fertilizer in agricultural to improve land fertility for increasing agriculture results.
 - In this context: socialization about the benefit of animal dung as fertilizer that will indirectly support the implementation of Biogas program.

With higher productivity of agricultural outputs, every family will have higher yields and possibly surplus from agricultural/ crops. This surplus output can be used for bio-fuel input or be sold in the market (to increase they income or buying power) or even be used for achieving a better food security.

Developing an appropriate value chain for agriculture products market in Sumba Island is a must; i.e.: to encourage the establishment of food processing cooperatives, or cooperative that manages the marketing of un-processed and processed agricultural products to sell to other areas outside the Sumba Island, or even for export; such as refined products made from corn, coffee, cashew nut, cassava, etc. With the availability of sufficient value chain on product market, the farmers will not only get better prices of products, but also be encouraged to sell the transformed agriculture products (which have higher added value) for getting higher revenues from their agriculture products.

2. To secure the availability of raw materials for supporting the biofuel program; it also needs to take socialization about planting perennial trees surrounding the productive agricultural lands, or to grow perennial trees that can improve availability of water sources.

Because almost all families in Sumba Island use open-fire stoves, which actually are very inefficient in term of firewood usage; so it is very worth to do to conduct socialization of permanent firewood stove ("improved cook stoves") construction in Sumba Island, such as already taken in East Java. By using permanent firewood stoves, the use of firewood for cooking purposes can be more efficient. As result, it will also reduce the work of female to collect firewood, and lessen the forest-cutting practices by the people.

To improve the welfare of the people of Sumba Island, in addition to increase the productivity and value of their productive results, should also be done by encourage them to reduce their unproductive expenditure - which is actually become a big proportion of their total expense and lessening their purchasing power for other more essential needs. Therefore, doing awareness campaigns to encourage the people for lessening / eradicating their smoking habits, *sirih-pinang*, and lessening the overgenerous traditional ceremonies is worth to do.

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CHAPTER - I

INTRODUCTION

Hivos has started an initiative to develop a showcase for a 100% renewable energy island in Indonesia, called 'Iconic Island'. The aim of the initiative would be to completely end the dependence on fossil fuels of this island, and to demonstrate and communicate the possibility thereof in the Netherlands as well as in Indonesia. It should on one hand provide energy to the islands population, and on the other hand also attract interest, cooperation and funding from institutions, companies and the public inside and outside Indonesia for replication.

After a scoping process, Hivos has selected the island of Sumba in East Nusa Tenggara province as target for this endeavor. A number of studies have been undertaken to look into the options for energy development on the island, stakeholder meetings have been undertaken and in March 2011 an agreement was signed with the four Bupati's of the Sumba districts, the governor and state electricity company (PLN). A limited number of actual energy activities have already started by Hivos, but the major role of Hivos is to mobilize resources, facilitate partnerships and assist the provincial government in taking strategic decisions on which energy strategies to take.

In the end, the project is expected to take around 10 years to reach its goals. The focus on renewable energy in Sumba should support the enhanced welfare of the ca. 650,000 island inhabitants, the vast majority of which currently live at low social and economic standards.

The following results are envisaged by the Iconic Island initiative:

- 1. All existing energy sources have been replaced by renewable sources (transport sector)
- 2. New renewable energy sources have been developed (including biogas, (micro-)hydro, wind energy)
- 3. The access to energy (off grid) and the electrification rate (grid connection) has increased
- 4. New productive activities have been initiated as a result of energy access and contribute to a more vibrant local economy
- 5. The socio-economic position of women has considerably improved as a result of access to renewable energy
- 6. Local authorities, private sector parties and community-based organizations have established formal collaborations with (local and foreign) investors in the field of renewable energy.

The welfare improvement and poverty alleviation is an important overall goal of the Iconic Island initiative; so for future assessment, Hivos carried out this survey for the baseline data in measuring the socio-economic impact of the programme in the future time.

The baseline study is intended to:

- Establish a reliable database on socio-economic and gender aspects in four districts in Sumba Island;
- 2. Serve as a basis for monitoring and evaluation of programme activities;
- 3. Enrich monitoring and evaluation through development of participatory indicators;
- 4. Provide benchmark data for future internal or external assessment of the Iconic Island initiative at a point in time that remains to be defined.

Information obtained

SMART⁹ indicators was developed to collect relevant baseline data, which will serve as basis for impact monitoring, in order to know the effect of Iconic Island Initiative onto the Sumbas' families, relating with:

- 1. New productive activities have been initiated as a result of energy access and contribute to a more vibrant local economy
- 2. The socio-economic position of women has considerably improved as a result of access to renewable energy

For addressing the above objectives, information obtained were as follow :

- 1. Household characteristics :
 - Condition of house: walls, main roofing materials, main flooring materials, ventilations.
 - Property status of house and of farming land.
 - Education level of the family members.
 - Occupation of the family members.
 - Income of the family members outside agriculture and husbandry.
 - Household expenditure for specific items (food, telecommunication, water, transportation, cigarettes, clothes, medical expenses, schooling expenses for children, crop transformation, traditional ceremonies, etc).
- 2. Time allocation and division of labor (gender/age specific).
- 3. Practices in the agricultural farm and husbandry.
 - Number of land owned vs. number of land cultivated for farming.
 - Type of crops cultivated; total consumed, sold in non transformed way, sold in transformed way.
 - Types and total number of animal owned, raised; stabled or not; total income made from the animal raising (if any).

⁹ S=Specific, M=Measurable, A=Achievable, R=Relevant, T=Time-bound

- Agricultural inputs : types of fertilizers used, usage volume, cost spent.
- Spending for agricultural expenditures (for agriculture and husbandry).
- Source of water.
- 4. Use and spending of energy mix : for cooking, for lighting, for income generating activities.
 - Current energy usage, source/access, expectation.
- 5. Sanitation and hygiene practices
- 6. Access to credit of development support
- 7. Women's participation in decision-making process: in selection of type of energy used, in the use of household income/expenses, education for children, the use of results from agriculture/husbandry.
- 8. Access to knowledge and information.
 - Awareness, source of awareness & attitudes toward Biogas.
 - Awareness, source of awareness & attitudes toward SEHEN.
 - Awareness, source of awareness & attitudes toward Biofuel.
- 9. Inclusiveness, vulnerable groups; i.e.: the caste system (the social position and status of people) in the society.

Additional info to be obtained for second survey :

- o Reason why they do not have electricity yet
- o Do they aware of Sehen, if yes, what is their constraint for not having it
- Would they interested on rental light equipment
 - If yes, how much would they afford to pay for the rental (Hivos will provide range of options to select)
- \circ $\;$ Are there any small kiosk available around the survey area
 - If yes, what are they selling and who owned the kiosk (civil servant/retiree/head of village etc)
- o Is the Sehen perform as user expected
- Do users are well inform on what to do if the unit is broken or what do they do when the unit is broken
- o Do user got the unit for free or paying from their own money
- o Do the monthly installment or pre-paid payment through bank account is affordable
- \circ $\,$ Do they still want to continue using Sehen after 6 month/1 year $\,$
- o What are the difficulties that user felt from Sehen

CHAPTER - II

STUDY APPROACH AND METHODOLOGY

2.1. Study design

This Sumba socio economic and gender baseline survey is more as quantitative survey. In accordance to the objectives of the study, communities covered in the survey are households in four districts of Sumba Island.

This baseline survey was conducted in two different times. The first survey conducted at the end of April until May 2012 towards 312 households. The second survey conducted at the end of November until December 2012 towards 268 respondent. Therefore, total sample for this baseline survey is 580¹⁰ randomly selected respondents. The respondents were interviewed by using structure questionnaires. Average length of the interview was approximately 90 minutes per respondent. Respondents interviewed in this study are: head of household/ male, and housewife/ female of family member who understand condition of the selected house. Meanwhile, for obtaining information about property status, education, income, time allocation, division of labor and decision making process within household, men and women within selected household were interviewed separately. For the second survey, booster sampling also used for getting additional 61 households of SEHEN user.

2.2. Sampling methodology

For this survey, the selection of sampling areas was conducted through cluster random sampling

method, with procedures as follows:

- Total sample allocated for each of the Kabupaten was determined **in proportion** to the total number of population of Sumba Island.
- Total sample allocated for each of the Kabupatens was determined in **proportion** to the total number of population of Sumba Island.
- All villages in the selected kabupaten was clustered based on electrification ratio data from Winrock. The clustering is as follow:
 - \circ Electrification ratio 0; 1 to 10, 11 to 20, 21 to 30, and so forth, with interval of 10.
- The village as the PSU will be selected by simple random sampling from each cluster; and the number of respondent per desa is **maximum 8 households only**.
- RT is the lowest administrative unit area for becoming the sample area of this study

¹⁰ Maximum sampling error is \pm 4.1% with confidence level of 95%

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In a short, Distribution of samples for each Kabupaten/Kota is conducted as follows:

- Total Kabupaten Southwest Sumba Center West Sumba East Sumba Sumba Sumba Island **Total population** 110,993 227,835 62.485 283.818 685,131 100% % 16% 33% 9% 41% Sample size - survey 1 44 106 30 132 312 44 88 24 112 268 Sample size - survey 2 Total 88 194 54 244 580
- a. Sample distribution : number of households

b. Sample distribution : number of villages - based on electrification ratio

Cluster of	West Sumba		East Sumba		Center Sumba		Southwest Sumba	
electrification								
ratio	Universe	Sample	Universe	Sample	Universe	Sample	Universe	Sample
0	3	1	61	9	6	1	7	3
3 -10	15	3	6	1	22	3	39	13
11 - 20	16	3	11	2	5	3	18	7
21-30	8	2	12	2	4	2	9	3
31-40	4	1	8	1	2	1	2	1
41-50	1	0	11	2	0	0	2	1
51-60	0	0	13	2	1	0	0	0
61-70	0	0	11	2	0	0	1	0
71-80	1	0	6	1	1	0	2	1
81-90	0	0	9	1	1	0	1	0
91-100	5	1	9	1	0	1	4	1

For the purpose of analysis on satisfaction level toward SEHEN, experiences in using SEHEN¹¹, and interest to keep using SEHEN, booster respondents (i.e. SEHEN users) were interviewed for the 2nd survey. Booster respondents were selected from outside the selected RW¹² in the selected or non selected villages. Number of booster sample respondents for interviews was determined in proportional toward the total number of population of Sumba Island. Thus, distribution of booster sample respondents for interviews is as follow

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
SEHEN User (n)	61	10	20	6	25

¹¹ Super Ekstra Hemat Energy or Super Extra Efficient Self Sufficient Energy (Sola Panel).

¹² Rukun Warga, a lesser administrative unit in Village.

Individual depth interview will also be carried out toward local community organizations or religious organizations.

2.3. Study implementation and Control

Questionnaires are designed by JRI Research, with reference to the objectives of the study, and consulted to Hivos. Meanwhile for fieldwork process, JRI gave trainings for 24 local fieldworkers who were recruited by Yayasan Donders¹³.

Pre testing questionnaire was conducted by Yayasan Donders team from April 30 to May 26, 2012, with supervision by JRI's field supervisors. Based on the results of the field test, questionnaire drafts were finalized and sent to Hivos for approval.

Fieldwork process for the first survey was carried out by Yayasan Donders team; meanwhile for the second survey was carried out by enumerators of the first survey but with full supervision by JRI's field supervisors. The interviewing conducted through house-to-house personal interviews using structured questionnaire. To ensure good data quality, control onto fieldwork process were conducted by JRI's field supervisors, through the following ways:

- The team members internally discussed the findings with the field supervisor to ensure reliability.
- Solving any new problem that might arise in the field.

Quality control process was also conducted by JRI Research, through the following ways:

- Conduct control toward the filled questioners, for checking reliability of data on questioners: the completeness, and consistence of questioner filling.
- Re-visit and phone call the already-interviewed respondents for interview eligibility purpose

2.4. Data Processing, Tabulation, Analysis and Report Writing

Data processing, tabulation, as well as analysis and report writing were conducted by JRI Research. Specifically for the analysis and the report writing, however, JRI Research did the work with Hivos.

¹³ Yayasan Sosial Donders (YSD): a foundation founded on January 7, 2010, situated in Waitabula -Kabupaten Sumba Barat Daya. YSD has missions to assist, help, and empower the poor and marginalized people to be independently self sufficient in their living, particularly in economy, education, environment, and social culture. Currently the foundation works in partnership with BIRU for development of biogas and organic agricultural sector in some villages of Kabupaten Sumba Barat Daya, Sumba Barat, and Sumba Tengah.

Compilation and analysis of data are essential before the preparation of a report. Tabulation, compilation and analysis of the data were done on the computer. Before data entry into the computer, the filled-in questionnaires were properly edited and coded. Data was processed using the program package of SPSS and Excel. Graphs, bar diagrams, etc., were used for analysis, and MS Word was used for report writing.

CHAPTER - III DESCRIPTION OF SURVEY AREA

Sumba is an island in eastern Indonesia, is one of the Lesser Sunda Islands, and is in the province of East Nusa Tenggara. Sumba has an area of 11,153 km², and the population was officially at 611,422 in 2005. To the northwest of Sumba is Sumbawa, to the northeast, across the Sumba Strait (Selat Sumba), is Flores, to the east, across the Savu Sea, is Timor, and to the south, across part of the Indian Ocean, is Australia. Geographically, Sumba Island is located at coordinate 9°40'S and 120°00'E.



Historically, this island exported sandalwood and was known as Sandalwood Island¹⁴.

Sumba is one of the poorer islands of Indonesia¹⁵. A relatively high percentage of the population suffers from malaria, and infan mortality rate is high.

Sumba is part of the East Nusa Tenggara province. The island and the very small islands administered along with it are split into four regencies (local government districts); these are: Sumba Barat (West Sumba), Sumba Barat Daya (Southwest Sumba), Sumba Tengah (Center Sumba) and Sumba Timur (East Sumba). The island accounts for some 14.6% of the provincial population in 2010. The provincial capital is not located on the island, but in West Timor.

¹⁴ http://en.wikipedia.org/wiki/Sumba

¹⁵ http://www.sumbafoundation.org

Most of the original forest has been cleared for the planting of maize, cassava and other crops so only small isolated patches remain. Furthermore, this clearance is ongoing due to the growing population of the island and a threat to the birdlife¹⁶. In 1998 two national parks have been designated on the island for the protection of endangered species: the Laiwangi Wanggameti National Park and Manupeu Tanah Daru National Park.

Up to March 2011, average electricity consumption in Sumba Island was about 8,065 kW (about 8 MW), distributed in 4 kabupaten, with total maximum supply of 10,905 kW (about 10 MW), coming from Diesel-power plant or PLTD (8,105 kw), Solar power supply or PLTM (800 kW), and Rent Diesel Engine (2,000 kW)¹⁷; thus, the electricity consumption in the Island is practically only for house lighting purposes.

Currently in Sumba Island, micro-hydro power becomes one of renewable energy sources to support the island as an iconic island. The island is now also developing solar power plant, through PLN's SEHEN Mandiri (Super Ekstra Hemat Energi Mandiri or Super Extra Efficient Self Sufficient Energy) program for remote communities in the island. It has also developed a center for solar energy power plant or *Pusat Listrik Tenaga Surya* (PLTS) in Bile Cenge, which supplies 500 kW to electricity network in Sumba.

Meanwhile, condition of four districts (Kabupaten) in Sumba Island can be seen in the following paragraphs:

WEST SUMBA

Capital city of kabupaten Sumba Barat (West Sumba) is located in Waikabubak.

Topography

Kabupaten West Sumba is a part of Sumba Island, and is one of Kabupaten in East Nusatenggara Province. It stretches across 9° 22' - 9° 47' South Latiture and 119° 08' - 119° 32', covering 737.42 square kilometer of lands. Most of the island is mountain range, with nearly 50% of which are with 140 – 400 declivity. In percentage, its undulating landscapes with 0° – 2° declivity cover about 10.82%, 3° – 14° declivity about 30.77%, 15° – 40° declivity 49.17%, and greater than 40° declivity about 9.25% of the total land areas of Kabupaten Sumba Barat.

Population

With 702,72 skqm areas or 1.48% of the total areas of East Nusa Tenggara Province, West Sumba is inhabited by 110,993 people or 2.37% of the total population of East Nusa Tenggara Province.

¹⁶ http://www.worldwildlife.org

¹⁷ http://www.kabarbisnis.com, 21 May 2012

Population density in the Kabupaten is 158 per sqkm, and with annual population growth of 2.26% in 1990-2000, and 2.32% in 2000-2010¹⁸

About half of total people in this kabupaten are practicing a traditional belief, Marapu. The others are Protestant, Catolik, Moslem, Hindu, and Budhists.

Most people in this kabupaten work in agricultural sector. Some 110-hectare areas in in West Sumba are now planted with cocoa trees, and some 2,280 hecatares are planted with tobacoo trees. Next to agricultural sector, cattle farming sector is also developed by local people. Buffalos, which are largely used in local cultural ceremonies, are raising in kecamatan Kodi, Walakaka and Katikutana. Buffalos are also utilized for traditional farming activities (renca).

Economy

Economy condition of West Sumba has increased yet not significantly each year. The increase in economy, however, is not comparable with population growth. In 2007, Regional Gross Domestic Product (PDRB) based on the 2000 Constant Price in West Sumba amounted to IDR 258.72 billion. In the following year 2008, the figures recorded IDR 270.85 billion . For the year 2009 and 2010, the figures recorded IDR 284.83 billion and IDR 300,69 billion respectively.

Meanwhile, PDRB per capita in West Sumba for the year 2007 recorded 2.35 million Rupiah. In 2008, the PDRB per capita reached 2.40 million Rupiah. And for the year 2009 and 2010, the PDRB reached IDR 2.47 million and IDR 2.55 million ¹⁹.

I miss data on average income as reported by statistics in Indonesia. Comparing Sumba with other regions and comparing data from study with statistics.

Electricity²⁰

Regarding the electricity power in Sumba, PT. PLN (Persero) Sumba branch owns 3 subsection offices (Kantor Ranting) and 1 electricity head office (Kantor Pusat Listrik) Waingapu. The 3 subsection offices are: Ranting East Sumba, Ranting West Sumba, and Ranting Sumba Jaya. Each of the subsection offices controls sub-sub sections. For West Sumba, they are, among other:

Subsection Sumba Barat:

• Sub subsection Walakaka

¹⁸ NTT dalam angka 2010

¹⁹ http://repository.ipb.ac.id

²⁰ http://www.pln-sumba.co.id/profil/profil_pln.html

- Sub subsection Wanukaka
- Sub subsection Mamboro

EAST SUMBA

Capital city of kabupaten Sumba Timur (East Sumba) is located in Waingapu.

Topography

Kabupaten Sumba Timur (East Sumba) is one of kabupaten in Sumba Island, East Nusa Tenggara Province. In past, this kabupaten was under Timor residency. East Sumba is divided into 22 kecamatan, namely: Haharu, Kahaungu Eti, Kambata Mapambuhang, Kambera, Kanatang, Karera, Katala Hamu, Kota Waingapu, Lewa, Lewa Tidahu, Mahu, Matawai Lapau, Ngadu Ngala, Nggaha Oriangu, Paberiwai, Pahunga Lodu, Pandawai, Pinu Pahar, Rindi, Tabundung, Umalulu, and Wulla Waijelu.

Topographically, East Sumba consist of coastal areas, lowlands (<100 meter) and mountainous lands. There are at 88 rivers and springs that never dry out, even during the dried season. Astronomically, East Sumba spreads across $119^{\circ} 45 - 120^{\circ} 52$ East (BT) and $9^{\circ} 16 - 10^{\circ} 20$ South (LS).

Geographically, north part of East Sumba is low and rocky and not productive areas, meanwhile the south parts of the districts are extremely hilly mountainous.

Population

Total number of population in East Sumba (2010) was 227,835 people, with density rate of 32 persons/sqkm. Next to the native East Sumba people, there are also Orang Sabu, Chinese origin, Arab, Bugis, Javanese, and people from other districts in East Nusa Tenggara. Local language in the area is Bahasa Sumba Kambera. Mostly, people in this kabupaten are Protestants, and few are Moslem, Hindu and Buddha. Some 39% others are practicing the traditional Marapu religion. Although their lands are less productive, but more than half of people in East Sumba are rice farmers. There are also animal farmers, employees, fishermen, and so on.

Economy

Economy condition of East Sumba has increased yet not significantly each year. For 2007, PDRB based on the 2000 Constant Price in East Sumba amounted to IDR 613.75 Billion. For the year 2008, the figures recorded IDR 655.13 Billion. And for the year 2009 and 2010 it reached IDR 682.57 Billion and IDR 715.50 Billion respectively.

In 2007 PDRB per capita in East Sumba amounted to IDR 2.62 Million. For the year 2008, the PDRB per capita recorded IDR 2.74 Million. And for the year 2009 and 2010, it reached IDR 2.84 Million and IDR 2.96 Million respectively.

Electricity²¹

PT. PLN (Persero) Ranting East Sumba owns 10 sub subsection offices, namely:

- Sub subsection Lewa
- Sub subsection Mangili
- Sub subsection Kananggar
- Sub subsection Nggongi
- Sub subsection Waijelu
- Sub subsection Tabundung
- Sub subsection Tanarara
- Sub subsection Kakaha
- Sub subsection Makaminggit
- Sub subsection Kamanggih

Mostly, the sub subsections own PLTD and generators to supply electricity in their areas. It is only sub subsections closed to the subsection ranting are interconnected with PLTD Waingapu and PLTD Kambajawa.

SOUTHWEST SUMBA

Capital city of kabupaten Sumba Barat Daya (Southwest Sumba) is located in Tambolaka.

Topography

Formed under the Law No. 16 year 2007, Kabupaten Sumba Barat Daya (Southwest Sumba) is new kabupaten in Sumba Island, East Nusa Tenggara Province, Indonesia. Southwest Sumba is 1 of 16 new kabupaten/cities set up in 2006. Southwest Sumba consists of 8 kecamatan, namely: Kodi, Kodi Bangedo, Kodi Utara, Laura, Wewewa Barat, Wewewa Selatan, Wewewa Timur, and Wewewa Utara.

Southwest Sumba is located in Sumba Island, stretching over 1,445.32 skqm lands across 900 18' – 1000 20' South Latitude and 11800 55' – 12000 23' East Longitude. The lands are mostly mountainous range, with nearly 50% of which are with 140 – 400 declivity. Its undulating landscapes make them vulnerable against erosions.

²¹ http://www.pln-sumba.co.id/profil_pln.html

JRI Research - Socio-Economic-Gender Baseline Survey, 2012

Population

From the 2010's population registration, total population in Southwest Sumba is 283,818 people, with density rate of 180 people per sqkm. Regarding the distribution of population, it reveals that the highest number of population is in Kecamatan Wewewa Timur (19.35%), and then in Kodi Utara (17.83%). Meanwhile, the lowest number of population is in Kecamatan Wewewa Utara (4.20%).

Based on *Pendataan Perlindungan dan Layanan Sosial* 2008 (PPLS'08), there are 35,825 poor households in Southwest Sumba , spreading out in 8 Kecamatan.

Economy

In 2007, Regional Gross Domestic Product (PDRB) based on the 2000 Constant Price in Southwest Sumba recorded IDR 336.00 Billion. For the year 2008, the figures amounted to IDR 351.76 Billion. And for the year 2009 and 2010, it reached IDR 369.06 Billion and IDR 385.17 Billion respectively.

In 2008 PDRB per capita in Southwest Sumba was decreasing. In 2007, PDRB per capita in Southwest Sumba amounted to IDR 1.24 Million, whereas in 2008 the figures only reached 1.22 Million. For the year 2009 and 2010, the PDRB per capita recovered to IDR 1.25 Million and 1.27 Million respectively.

Electricity²²

Actually, islands in East Nusa Tenggara Province have capacity to self sufficiently meeting the need of energy, since the Islands have varieties of renewable energy sources, particularly solar, wind, and water energy sources, and biogas.

To optimize their capacity into the electricity system network, the renewable energy-fueled power plants apply smart micro grid (SMG) technology. The first SMG-based power plant in Indonesia is built in Billa Cenge, Southwest Sumba . It integrates PLTS photovoltaic with capacity of 500 kilowatt peak designed by BPPT and jointly built by Surya Energi Indotama or PT LEN Industri into PLN's 20-kilovolt electricity network.

In past, PLN's electricity network in this kabupaten was only supported by two diesel-fueled power plants (PLTD), in Waikabubak (7 units, with capacity of 4.5 MW) an din Waitabula (4 units, with capacity of 2.1 MW). These PLTD are situated 60 km and 20 km from the SMG control center. Inside the SMG, there are also renewable energy-fueled power plant, namely micro hydro power plant in Lokomboro (5 units, with capacity of 2,3 MW).

²² http://www.ristek.go.id/index.php/module/News+News/id/11327/print

Capital city of kabupaten Sumba Tengah (Center Sumba) is located in Waibakul.

Topography

Kabupaten Sumba Tengah (Center Sumba) is a kabupaten in East Nusa Tenggara Province, Indonesia, formed under the Law No. 3 year 2007. This Kabupaten is as result from propagation of Kabupaten West Sumba.

Center Sumba consists of 5 kecamatan, namely: Kecamatan Katikutana, Kecamatan Mamboro, Kecamatan Umbu Ratu Nggay, Kecamatan Umbu Ratu Nggay Barat, and Kecamatan Katikutana Selatan.

Center Sumba spread across 9° 20' - 9° 50' South (LS) and 119° 22' - 119° 55' East (BT). Total land areas of the Kabupaten is 18,787.74 hectares. Mostly, areas of the Kabupaten re mountainous, and 50% with declivity of 14° - 40°. The mountainous topography makes the Kabupaten is fragile against erosions. Main potential sectors of Kabupaten Center Sumba are agricultural, plantation, husbandry, fishery and tourism sector.

Population

Center Sumba, with total areas of 1868,74 sqkm or about 3.95% of total areas of East Nusa Tenggara Province, is inhabited by 62,485 people or 1.33% of total population of East Nusa Tenggara. Population density in the Kabupaten is 33 per sqkm. Meanwhile, population growth per year in 2000-2010 was 2.29%²³.

Economy

In 2007, Regional Gross Domestic Product (PDRB) based on the 2000 Constant Price in Center Sumba recorded IDR 91.97 Billion. For the year 2008, the figures amounted to IDR 94.60 Billion. And for the year 2009 and 2010, it reached IDR 97.56 Billion and IDR 101.20 Billion respectively.

In 2007, PDRB per capita in Center Sumba amounted to IDR 1.45 Million, whereas in 2008 the figures reached IDR1.49 Million. For the year 2009 and 2010, the PDRB per capita recovered to IDR 1.50 Million and IDR 1.53 Million respectively.

²³ "NTT dalam angka 2010"

JRI Research - Socio-Economic-Gender Baseline Survey, 2012

Electricity

Electricity energy is not yet significantly developing in Center Sumba. This kabupaten runs electricity energy from waterfall/water flows, such as PLTMH or PLTA that spread evenly in all kecamatan of Center Sumba.

No	WATER SOURCES	LOCATION		ESTIMATION			
		DESA	KEC	HEAD (M)	POTENTIA L (KW)	KPST S (KW)	DEBIT (LTR/DT R)
1	Matayangu I	Waimanu	Ktktn Slatn	60	1000	1000	150
2	Matayangu II	Waimanu	Ktktn Slatn	30	40	40	60
3	Soru	Soru	URG	23	20	20	30
4	Wanga	Padiratana	URG	40	500	500	100
5	Waimangela/ Loku Kabarang	Bolubokat	URG	30	40	35	25
6	Maradesa	Maradesa	URG	35	30	30	30
7	Papunggu	Praikaroku Jangga	URG	20	18	18	150
8	Bola/Lowa	Wangga Waiyengu	URG Brt	35	30	30	25
9	Prai Alala	Sambali Loku	URG Brt	25	20	20	20
10	Mbewi	Wendewa Timur	Mamboro	32	250	250	150
11	Praikalala	Wendewa Timur	Mamboro	40	1000	1000	200
12	Waisoka	Ole Ate	Mamboro	60	500	1000	200
13	Ana Gallu	Umbu Mamijuk	URG Brt	Not yet studied			

Water sources for PLTA and or PLTMH²⁴

²⁴ Dinas Pertambangan dan Energi Kabupaten Sumba Tengah Tahun 2008

CHAPTER - IV

HOUSEHOLD CHARACTERISTIC

4.1. Household size

The average household size of respondents is 5.7 persons, with the highest (6.0 persons) in Center Sumba, and the smallest in West Sumba (5.1 persons). Details are shown in the following table.

Table – 4.1a: household size

	Total	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : total resp	580	88	194	54	244
Avg. household size	5.7	5.1	5.7	6.0	5.9

4.2. Position of household's survey in the community

Social castes still exist in Sumba Island. In this survey, majority of the sampled households (67%) are from common class people (*Ata*). Based on qualitative interviews with several community organizations that have worked in Sumba Island for a long time, it is found that the noble class people (*maramba*) always dominate land ownership, ruling power in government bureaucracy and decisions in traditional communities. Usually, their status and decisions are supported by religious figures (*Kabisu*). Next to these three classes, there is also '*anak belis*, a class who serves the maramba. Relationship between the two classes (Maramba and anak belis) is inherited for generations. *Anak belis* family is obliged to serve Maramba family for keeping and working on Maramba's lands and cattle. On the other hand, the Maramba family is responsible over the life of *anak belis* family.

Oftentimes, the social class or caste only hinders the planning and implementation of bottom-up development processes, and in turn slows down the realization of poverty eradication programs in Sumba Island. Success of development programs in Sumba Island depends largely on supports from the noble class (Maramba) and religious figures (Kabisu); as the common class people (*ata*) highly value these two classes – though from time to time, domination of the noble class and religious figures has lessened. Meanwhile, the *anak belis* group tends to have no right to express opinion at all, because they have very limited access or ownership to any economic source.

Meanwhile, the non-native group, which is mostly found in East Sumba (14%), is actually bringing transformation on the social structure. The control of economic sources has begun to change, from the noble class to the non-native group. Through their hard works, the non-native group can drive up higher economic activities. Moreover, marriages between the non-native group and the masses (*ata*) has definitely lifted up prosperity of some of the masses (*ata*). This situation, then, has lessened down domination of the noble class in the community.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : Total resp	580	88	194	54	132
Ata (the masses)	67%	63%	61%	67%	73%
Maramba (noble class)	13%	14%	14%	19%	9%
Kabisu (religious figures)	13%	23%	7%	9%	14%
Non-native	5%	1%	14%	0%	1%
Anak belis	3%	0%	4%	6%	2%

Table – 4.2: status of family/ head of household within Sumba's community.

4.3. Education level

This baseline survey discovers that people in Sumba Island with age of older than 6 years old are mostly low educated or only have low education level -- primary school (graduated/ not graduated) (55%) and have no formal education at all (10%). Vocational school graduates in the Island are also very low (2%), compared with Senior High School graduates (12%). Compared with result of the 2010 census from BPS (Center Bureau of Statistic of Indonesia), it reveals that in Sumba Island, percentage of people with higher education level (senior high school and university/diploma – 16%) is significantly lower than the average percentage of education profile of total Indonesian people (22%).

This survey also discovers that the male member of family can have higher education attainment (such as senior high school or diploma/university) than the female member does. It is as indicated from the resulting figures that from 326 Senior High School graduates, 52% of them are males, and 48% are females. Similarly, from 104 diploma/universities graduates, 60% of them are males, and 40% are females. Meanwhile for those with no formal education (n=270), most of them are females (56%).

Table. 4.3 : Education level.

(Base: total member of 580 households= 2,767)



	Sumba Island	Indonesia
Base :	2,767	214,962,624
Have no formal education	10%	9%
Primary school (graduated/ not graduated)	55%	50%
Junior high school	18%	17%
Senior high school	12%	17%
Vocational school	2%	2%
University/ diploma	4%	5%

Table 4.3: Education level among males and females.

Base : total member with the age >6 y.o within 312 households	TOTAL	Level of education					
		Have no formal education	Primary school	Junior high school	Senior high school	Vocati onal school	University/ diploma
	2767	270	1520	487	326	60	104
Male	51%	44%	52%	50%	52%	48%	60%
Female	49%	56%	48%	50%	48%	52%	40%
net (male - female)	2%	-13%	3%	1%	3%	-3%	19%

4.4. Age

Total number of members from the 580 sample households interviewed on this survey is 3,346. On average, it can be said that each household has 5 to 6 family members, and some 39% of the total households do not have kids with age of younger than 6 years old

Median of age for household sample in Sumba Island is 20 years old, indicating that people of Sumba Island is classified in youth category to intermediate category. Youth category is if the community's median of age of < 20 years old. Intermediate category is if the median of age is 20-30 years old. Meanwhile old group is if the median of age is > 30 years old.

Dependency ratio of Sumba Island people is 46.5. This indicates that from every 100 productive age people (15-60 years old), some 46 people are non-productive (0-14 and 60+). These figures also indicate a slightly lower dependency of people in Sumba Island, than in total Indonesia (i.e : 51.2).

	Sumba Island	NTT Province
Base : total HH members	3,346	4,088,496
0- 6 y.o	19%	
6- 10 у.о	11%	15%
11 - 20 y.o	22%	24%
21 - 30 y.o	16%	17%
31 - 40 y.o	12%	15%
41 - 50 y.o	10%	12%
51 - 60 y.o	6%	8%
> 60 y.o	6%	9%
Median	19.5 y.o	

Table 4.4: Age Distribution of Family Members

4.5. Religion

Protestant and Catholic are two religions practiced mostly by respondents (each with percentage of 55% and 33%). In Center Sumba, all respondents are followers of these two regions (Protestant: 80%, Catholic: 20%). Only 9% of the total 312 respondents claim they are followers of Marapu –a native belief of people in Sumba Island.

Although majorities of respondents are Protestant and Catholic, but in reality syncretism with Marapu belief still exists among them. It is as reflected from their ritual practices and traditional ceremonies, as their ancestor worship is still strongly dominating in their religious practices. Thus, every possible practice to please their ancestor becomes very important aspect for motivating the people to do a certain action or practice.
	TOTAL	West Sumba	Sumba Timur	Center Sumba	Southwest Sumba
Base :	312	44	106	30	132
Protestant	55%	48%	63%	80%	45%
Catholic	33%	32%	19%	20%	48%
Marapu	9%	18%	12%		6%
Islam	1%		4%		
Charismatic church	1%		2%		
Not answer	0%	2%			

4.6. Housing materials

Almost all of the household keep the traditional architectural form of their houses. For their houses, they keep using building materials found from surrounding environments.

Bamboos as building materials for wall and floor are largely used in West Sumba, Center Sumba and Southwest Sumba. Meanwhile, permanent wall (though not cemented) is mostly found in East Sumba (13%). Likewise, ceramic floor is also found mostly in East Sumba (6%).

For the roofs of their houses, most of respondents in East, Center and South West Sumba use Zinc (76%, 69% and 59% respectively). Meanwhile in West Sumba , most of them use building materials from their surrounding environment; i.e.: coarse grass and palm leaves (53% and 6% respectively); only 39% of respondents use Zinc roof of their houses.

Mostly, houses in Sumba Island only have very minim window ventilation, and generally (83%) with no glass on it.

		TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
	BASE	580	88	194	54	244
	Bamboo	61%	73%	44%	80%	66%
	Wood or coconut stem	19%	18%	33%	17%	9%
The walls	Semi permanent	13%	6%	10%	2%	20%
	Permanent, Non- cemented	7%	1%	13%	2%	4%
	Permanent, cemented	1%	2%			2%
	Zinc	63%	39%	76%	69%	59%
Roof	Coarse grass (Alang- alang)	35%	53%	21%	31%	40%
1001	Palm leaves	1%	6%			
	others	1%	1%	3%		1%
	Bamboo	47%	76%	18%	59%	56%
	Concrete	22%	15%	18%	17%	29%
Flooring materials	Wood	18%	2%	47%	6%	3%
indicitate	Earth	11%	5%	11%	19%	11%
	Ceramics tile	3%	2%	6%		2%
	Not fitted with glass	83%	94%	80%	91%	81%
Window	Some, fitted with glass	9%	2%	10%	9%	10%
	All, fitted with glass	8%	3%	10%		9%

Table – 4.6: Condition of house – housing materials

Picture : housing condition



Picture : bedroom

Picture : countrified in Sumba Island





4.7. Ownership of Valuable asset

Regarding the ownership of houses, there are 6% families of total 580 households who live in houses not belonged to them – these are particularly found in West and East Sumba (10% and 9% - respectively). Although in general, houses are owned jointly by male and female (62%), but if we count male and female as separate entity, we found that more males than females (89% vs. 67%) who have an access to the house ownership. It is also for the ownership of other valuable assets such as farming land, livestock, and motorcycle.

Regarding the farming land, some 5% households don't have any agriculture lands at all, and 7% households work on agriculture lands not belonged to them. Next, 20% households don't have livestock (excluding poultry), meanwhile 6% households raise livestock that are not belonged to them.

Ownership of automotive is relatively low. Only 19% households own motorcycle, and only 1% households own cars.

Table 4.7a. Ownership of valuable asset.

	The house	farming land	Live stock (excluding poultry)	poultry	motorcycle	Car
Base	580	580	580	580	580	580
Owned by the household	<u>94%</u>	<u>88%</u>	<u>76%</u>	<u>79%</u>	<u>19%</u>	<u>1%</u>
- owned by male	27%	28%	16%	13%	7%	0%
- owned by female	5%	4%	4%	4%	1%	0%
- owned by both	62%	56%	56%	62%	11%	1%
Owned by other	6%	7%	6%	4%	3%	0%
Don't have it	0%	5%	20%	18%	78%	99%

Regarding legal ownership status of the house, only 46% households having legal ownership status (certified - proprietary right), some 40% are with no document at all, meanwhile 13% are only with conditional ownership document/Girik²⁵. Households who have certified documents for their houses and farming lands are found most in Center Sumba (75% and 71% respectively).

Meanwhile in East and Southwest Sumba districts, only less than a half of the total households own certificates for their houses (41% and 43%, respectively). This is contrary to the fact that these two districts are actually relatively growing better than in other districts, because they have better interisland transportation facilities like sea harbor and airport.

This is not far different with ownership status of farming land. Some 51% households have certified documents for their agriculture lands, but 34% others don't have any document for their lands at all; and 15% have conditional ownership documents for their farming lands.

Certified documents for the farming lands are least found in Southwest Sumba (44%). In fact, 44% of 224 HH farmers in the district are cultivating lands without any certified document of property at all (see table 4.7c).

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base:	543	80	176	53	234
Certified - Proprietary right	46%	49%	41%	75%	43%
Conditional ownership	13%	6%	22%	6%	11%
No document at all	40%	45%	37%	19%	46%

Table 4.7b. Ownership documentation of houses (among those who own house)

²⁵ Property Ownership Document that is legalized by head of neighborhood or *Kepala Lingkungan* only.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base	511	78	157	52	224
Certified - Proprietary right	51%	54%	52%	71%	44%
Conditional ownership	15%	5%	28%	6%	12%
No document at all	34%	41%	20%	23%	44%

Table 4.7c. Ownership documentation of the farming land (among those who own farming land)

4.8. Occupation of head of household, and the housewives

Agriculture and husbandry are the main source of income for almost all males (90%) in Sumba Island –and generally are as their main occupation (84%). It is also for females (41%), although for some 11% of females, agriculture and husbandry are only considered as their second job, next to their main job in domestic sector (household works). In this survey, the females who are categorized as female farmers are those who have the right in determining the use of or in selling agricultural and husbandry results they have worked on. It reveals that there are 43% females who also work as farmers but do not have the right in determining the use of or in selling agricultural and husbandry results are classified as unpaid family worker. Thus, in total, there are 84% females (housewives) who actually have contribution in agriculture and husbandry sector.

In total, there are 16% males who work as dependent workers; and all of them as unskilled labor -- consisting of 4% males who make it as their first occupation, and the other 12% males who make it as their second occupation next to their main occupation as farmers. Meanwhile, percentage of unskilled female workers is very low, only about 2%.

In total, civil servants or retirees are found among 7% males and 3% females. Number of independent workers (who generally open kiosks of daily consumptive goods, auto repair outlets, and taxi bike riders) is quite low, only 8% of males and 6% of females.

Regarding the occupations shown above, it clearly shows that in Sumba Island number of non agriculture and husbandry jobs is very limited.

	Males			Females			
	First occupation	Second occupation	Total	First occupation	Second occupation	Total	
Farmer, livestock farmer(independent)	84%	6%	90%	30%	11%	41%	
Civil servant	5%	0%	6%	3%	0%	3%	
Civil servant, retired	1%	0%	1%	0%	0%	0%	

Table 4.8 a: Occupation of head of household and housewives

Other occupation, independent	3%	5%	8%	1%	5%	6%
Other occupation, dependent	4%	12%	16%	1%	1%	2%
Private company employee	1%	0%	1%	0%	0%	0%
Unpaid family worker	*)	7%	8%	15%	28%	43%
Household, other retired	*)	*)	1%	48%	19%	67%
Unemployed	*)	0%	*)	0%	0%	0%
Village head/apparatus	0%	*)	*)	0%	*)	*)
None	0%	69%	69%	0%	36%	36%

*) = the percentage is less than 1%

4.9. Household income

Although they mostly do farming and husbandry (96% each), but not all of the households earn money from their agriculture and husbandry activities. Some 83% households earn money from their agriculture activity, only 38% households earn money from husbandry activities, and 44% earn money from other sources.

In total, average income per household per year in Sumba based on this study is IDR 9,385,878, or IDR 1,646,645 per capita per year.

Total personal income, usually, is lower than GDP²⁶. The GDP is counted based on amount of expenses, and is calculated from consumption of people + investment + government expenditure + (export – import). If comparing the total personal income/year resulting from this survey with the GDP per district; there is indication that the separation of Southwest Sumba from West Sumba has brought faster economic flows for people in Southwest Sumba; since the gap between GDP per capita (IDR 2,550,000 per year) versus personal income (IDR 920,753 per year) in West Sumba is bigger than in Southwest Sumba (IDR 1,530,000 for GDP per capita per year, versus IDR 1,1391,661 for personal income per year). That is as an indication that economic activities in West Sumba are getting dependent on the regional government expenditure and investment.

Economic gap among households in Sumba Island is quite wide, with annual income per household ranging from IDR 0 to IDR 168,250,000. Twenty percent (25%) of households from the lowest tier have annual income between IDR 0 and IDR 751,500; and 25% households from the highest tier have annual income between IDR 9,237,500 and IDR 168,250,000 per year. The widest gap is in East Sumba, where income of 25% HH with the lowest tier only ranges from IDR 0 to 792,500 per year; meanwhile income of 25% of the upper-class HH samples ranges from IDR 12,187,000 to IDR 168,250,000 per year(*please see table 4.9a*).

²⁶ wikipedia.org/wiki/Pendapatan_per_kapita

Generally, non-native families, which are non native people of Sumba Island, have higher income than native. On average, income of the non-native family is IDR 33,796,129 per year, or more than 2 times bigger than incomes of Maramba families, which are actually placing in the highest social strata among native people of Sumba Island (*please see table 4.9b*). The non-native families are largely found in this East Sumba District (14%), which eventually make the average income of families in East Sumba District higher than in the other three districts. On average, income per household in East Sumba district is IDR 13,254,892 per year, or IDR 2,325,892 per capita per year, far higher than average income per household in the other three districts.

Currently, the non-native group is quite dominating in governmental sector and trading of goods and services. Meanwhile, although they only own relatively few land than the native families do, but average income per household earned by the non-native group is higher than income earned by native people from the agriculture and husbandry sector (*please see table 4.9b*).

In contrary, average income per household in West Sumba is the **lowest**, only at IDR 4,695,841 per year, or IDR 920,753 per capita per year. It is because generally families in West Sumba only rely on agriculture sector (63%) and husbandry (38%).

In Southwest Sumba , although 93% HH samples rely on agriculture sector, but their average income is far higher than average income of households in West Sumba, namely at IDR 8,267,871 per year. It is because number of households that own side income sources (outside agriculture and husbandry sources) is significantly far higher than in West Sumba (32% from the total 132 HH vs. 20% from the total 44 HH). Meanwhile, average income of farmers from agriculture sector is also higher than income of farmers in West Sumba. It relates to the growing economic activities in Southwest Sumba , due to the existence of harbor and airport in Southwest Sumba district.

	Total	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : total households	580	88	194	54	244
HHs who do farming	96%	95%	92%	100%	99%
HHs who do husbandry	96%	99%	95%	98%	96%
HHs who have income from agriculture results	83%	63%	35%	630%	4%
HHs who have income from husbandry results	38%	38%	18%	252%	3%
HHs who have income from other sources	44%	27%	54%	46%	41%
Average income per household from all source of income per year (IDR)	9,385,878	4,695,841	13,254,892	8,438,731	8,210,799
Total personal Income /year (IDR)	1,646,645	920,753	2,325,420	1,406,455	1,391,661
Median (HH)	2,700,000	960,000	3,125,000	6,805,000	2,550,000
Min (HH)	0	0	0	0	0

Table 4.9.a : Household income

Max (HH)	168,250,000	58,800,000	168,250,000	72,000,000	121,900,000
Q1 (HH)	751,500	281,250	792,500	362,500	1,050,000
Q3 (HH)	9,237,500	5,012,500	12,187,500	9,837,500	7,900,000
StDev	19,790,322	9,812,953	27,563,030	12,411,397	15,499,411
GDP per capita / year (IDR)		2,550,000	2,960,000	1,270,000	1,530,000

Table 4.9 b : Average household income - based on group of community

	Average Income/ year						
	From other source	From agriculture	From Livestock	Remittance	TOTAL		
Maramba (noble class)	12,215,014	1,628,116	1,525,068	86,301	15,368,199		
Kabisu (religious figures)	4,149,589	1,613,753	658,562	102,740	6,421,904		
Ata (the masses)	4,758,418	1,460,943	805,580	163,144	7,029,580		
Anak belis	2,320,000	1,398,333	1,480,000	313,333	5,198,333		
Non Native	29,641,935	2,086,452	2,067,742	48,387	33,796,129		

4.10. Household expenditure

Regarding the day-to-day foods consumed by people in Sumba Island, this study discovers that dayto-day foods consumed by some of families are very simple, usually only consisting of basic foods (corn, rice or cassava), plus vegetables or coconuts; picked up from their farms or yards. They only consume meats during traditional events (*pesta adat*), when supply of meats is very plentiful.

Generally, people in Sumba Island plant food crops for their own consumption. Among households who plant corn (91% of total households), they use nearly all (89%) of their harvested corn for their own consumption, whereas the other 11% are both for own consumption and for sale. The lowest tendency to consume all of the harvested corn is found in Center Sumba (68%).

This is also for rice cultivation. Among households who cultivate rice (70% of total households), nearly all of them uses the harvested rice for their own consumption (85%), and the other 15% are both for own consumption and for sale. Here, the lowest tendency to consume all of the harvested rice is found in West Sumba (73%), and in Center Sumba (75%). Similarly, among households who plant cassava (69% of total households), nearly all of them use the harvested cassava for their own

²⁷ GDP 2010, over the year 2000 Constant Price (Center Bureau Statistic of Indonesia 2010); GDP is calculated from the expenditure = *consumption+ investment + government expenditure + (*export - import*)*

consumption (91%). These are reasons why the average expenditure for foods among households in Sumba Island is quite low, namely only IDR 5,145,996 per year; with the lowest one in West and Center Sumba, with average expenditure are less than IDR 3 million per year for each household (*see table 4.10.c*). In overall, 2% of 580 sample households, they rarely or even never bought food materials within the past 1 year (*see table 4.10a*). For meeting their daily needs, they consume results from their agricultural and husbandry activities. This condition is found most in Center Sumba (6% of 54 sample households); and is not found at all in Southwest Sumba District.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base	580	88	194	54	244
Food	98%	98%	98%	94%	100%
Clothes	91%	88%	86%	87%	96%
Transportation	87%	83%	84%	74%	95%
Cigarettes	70%	73%	68%	76%	70%
Traditional Ceremonies	64%	86%	59%	48%	64%
Sirih pinang	64%	34%	62%	70%	74%
Medical Expenses	63%	51%	55%	26%	83%
Schooling Expenses for Children	63%	61%	59%	63%	67%
Telecommunication	49%	26%	60%	52%	49%
Water	22%	1%	14%	0%	40%
Crop Transformation	13%	11%	6%	24%	16%

Table 4.10 a. Type of household expenditures – in the past one year.

Table 4 10 b	Food cror	s planted	consumed	and sold
	1 000 0100	s plantea,	consumea,	una 30ia.

		Total	West Sumba	East Sumba	Center Sumba	Southwest Sumba
	Base :	557	86	179	54	238
Plante	d					
	Corn	91%	87%	89%	98%	91%
	Rice	70%	77%	65%	94%	66%
	Cassava	69%	76%	49%	80%	80%
Sold						
	Corn	10%	19%	7%	31%	4%

Rice	10%	21%	11%	24%	3%			
Cassava	6%	9%	3%	13%	5%			
% of households who us	% of households who use the entire harvested results for their own consumption ²⁸							
Corn	89%	79%	92%	68%	96%			
Rice	85%	73%	84%	75%	96%			
Cassava	91%	88%	94%	84%	93%			

Meanwhile regarding the need of clothes, 9% of the total 580 sample households said that they never bought any new clothes within the past 1 year. For those who bought new clothes; their average spending for new cloth is IDR.603,520.- per year; with the lowest spending for new clothes is found in West Sumba, namely at only IDR.369,818 per year for each household.

For transportation purpose, 13% of the total 580 sample households said they never spent money for transportation purpose, because they never left their village at all. In general, the average expenditure for transportation is IDR 1,281,857 per year. This survey indicates that mobility rate of families in Southwest is the highest, compared to other districts. It is as reflected from the total average expenditure for transportation, i.e. : IDR 1,766,522; followed by East Sumba, with average total for transportation, i.e. 1,139,945.

Among 580 households, it reveals that 63% of them had spent money for education of their children and also 63% had spent money for medical services within the past one year. Meanwhile, more households spent their money for buying cigarettes (70%); and for traditional ceremonies, and *sirih pinang*²⁹ (64%).

The average expenditure for cigarettes per year (IDR 1,829,942) is nearly equal with the average expenditure for education of their children (IDR.2,294,423). In West and Southwest Sumba, in fact, average expenditure for cigarettes are slightly higher than the average expenditure for education of their children (IDR. 1,810,500/ IDR 2,222,323 vs IDR 1,748,673 / IDR 2,137,586) - *see table 4.10.c*). Most of families in West and Southwest Sumba are burdened with expenditure for cigarettes (73% and 70%, respectively).

Expenditures by families in Sumba Island for cultural event such as traditional ceremonies *and sirih pinang* are also considerable, with an average of IDR 1,493,461 for traditional ceremonies, and IDR 902,850 for *Sirih Pinang* –higher than expenditures for medical services (IDR 743,925).

The highest expenditure for traditional ceremonies is found among households in Center Sumba, namely at IDR 2,299,615 on average per year.

²⁸ The percentages are calculated from number of those who plant respected plants, not from the total sample of respondents.

²⁹ Sirih pinang is a common habit practiced by many people in Sumba Island by chewing *daun sirih* (*piper bettle*) and pinang (*Areca catechu L/betel nut*.) mixed with *gambir* (*Uncaria gambir* Roxb/ betel bite) and kapur (lime stone)

Particularly for the traditional ceremonies, the expenditure is based on the money spent only, excluding the price of livestock presented or slaughtered for the ceremonies, which in 1 year could use up half of their total livestock (see also table 6.3b)

Oftentimes, high devotion to tradition brings difficulty in increasing prosperity of people in Sumba Island. Habitually, most native people in Sumba Island prefer lessening their budget for children's educations to making contribution into traditional ceremonies. In fact, as said by some non-governmental organizations, commitment to the tradition has repeatedly become hindrance factors in intervention program activities. Sometimes, schedules of program activities have to be changed or delayed for several weeks, due to traditional activities. Blind devotion to tradition, sometimes leads to a crime, such as stealing of animals for traditional ceremonies.

Some 49% of the total 580 samples spend moneys for telecommunication expense, namely for purchasing cellular phone pulses, with average allocation of IDR 884,969 per year – per household. Similar with the average The average spending for communication in East & Southwest Sumba are also higher than in the other two districts (*see table 4.10.c*).

From qualitative research, it shows that interest to own cellular phone, particularly among teenagers, is very high; the need to own and use cellular phone is higher than the need of schooling purposes. Unfortunately, their parents seem happy if their kids own cellular phone, or can ride a bike (even if their kids do not go to school). They are proud if their kids look modern like teenage celebrities in television.

Meanwhile, regarding the drinking water, 40% households in Southwest Sumba and 14% households in East Sumba district spent moneys for purchasing water in the last 1 year, with average expense of IDR 1,385,406 per year per household in Southwest Sumba, and IDR 396,286 per year per household in East Sumba district.

Pic : Sirih pinang



Table 4.10.c: Average expense per year among household who spend money for the related purposes (IDR).

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Food	5,145,996	2,284,988	4,607,389	2,949,020	7,032,996
Clothes	603,520	369,818	463,404	535,532	792,668

Transportation	1,281,857	621,151	1,139,945	267,000	1,766,522
Cigarettes	1,829,942	1,810,500	1,540,629	1,155,220	2,222,323
Traditional Ceremonies	1,493,461	1,374,475	717,768	2,299,615	1,973,214
Sirih Pinang	902,850	459,333	639,909	914,737	1,136,244
Medical expenses	743,925	548,068	795,456	184,615	796,049
Schooling Expenses for Children	2,294,423	1,748,673	2,156,607	4,339,588	2,137,586
Telecommunication	884,969	646,435	954,353	612,429	927,563
Water	1,155,003	50,000	396,286		1,385,406
Crop Transformation	754,643	579,560	1,641,500	147,308	729,103
TOTAL EXPENDITU	RE				
Mean	12,209,664	7,259,388	10,095,876	9,206,907	16,340,190
Median	9,288,000	3,744,000	6,230,000	5,400,000	13,310,000
Min	126,000	220,000	126,000	1,020,000	1,280,000
Max	135,600,000	57,360,000	94,560,000	71,744,000	135,600,000
Q1	3,668,750	1,326,000	2,137,500	3,945,000	8,760,300
Q.3	16,211,000	11,413,500	13,502,500	8,980,000	19,687,000
St.Dev	13,224,169	8,659,874	13,007,076	11,641,026	13,940,271

Regarding the total expenditures for all items shown above, it shows that the widest economic gap is found in East Sumba and Southwest Sumba. In East Sumba, 25% sample households from the lowest stratum run their living by spending IDR 126,000 to IDR 2,137,500 per year; whereas 25% sample household from the highest strata spend IDR 13,502,500 to IDR 94,560,000 for their living per year. Meanwhile in Southwest Sumba, 25% sample households from the lowest strata spend IDR 1,280,000 to IDR 13,310,000; and 25% sample households from the highest strata spend IDR 19,687,000 to 135,600,000 per year for their living.

Here, it should be underlined that it is not accurate to measure the prosperity level of Sumba people from the changes of percentage of their expenditures for non-food vs. foods - *the method which is often applied by government or some social organizations when measuring prosperity level of the people* – since for most people of Sumba, they rely more on their harvest results for meeting the need of foods.

4.11. Source of water

Sources of water for meeting the household purposes are really varying. River, lake (31%), pulley wells (23%) and rain (21%) remain as important sources of water for the households. In Southwest Sumba District, in fact, number of households who rely on rainwater for their household purposes is quite high (41%). It is also for households who buy water from retailers (28% of total households in the district). Meanwhile households who use wells with electric pumps are only found in East Sumba (5%) and Southwest Sumba (< 1%).

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : total respondent	580	88	194	54	244
River, lake	31%	36%	31%	41%	27%
Wells (pulley well)	23%	28%	29%	63%	7%
Rain water	21%	3%	9%	6%	41%
Spring	18%	24%	13%		23%
Purchase it from retailer	13%		5%		28%
Community tap	11%	3%	20%	6%	7%
PDAM ³⁰	9%		11%	2%	11%
Manual pump	2%	8%	2%		
Electric pump	2%		5%		0%

Table 4.11a	Source	of water	(Multiple	answer)
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For 84% households, water is something difficult to get. For household purposes, they have to fetch water from outside house, with average distance of 465 m, and the farthest distance of 2km.

On average, households in West Sumba are in more difficult condition in finding water for their household purposes than households in other three districts are. All household samples (100%) in West Sumba have to fetch water far from their houses (738m on average); meanwhile 100% household samples in Center Sumba have to fetch water from 418m distances, or about a half away compared to household in West Sumba.

On the other hand, households who do not need to fetch water for their household purposes are only found in East and Southwest Sumba (25% and 18% respective); because they already have wells or access to water from water drinking company (PDAM).

³⁰ Perusahaan Daerah Air Minum (PDAM) or Regional Drinking Water Supply Company

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : total respondents	580	88	194	54	244
Fetching water from outside their houses	84%	100%	75%	100%	82%
Avg distance from home to water source (m)	465	738	373	418	425
No need to fetch water from outside their houses	16%		25%		18%

In the past 1 year, 45% households --particularly in Center Sumba (65%) and Southwest Sumba (55%)-- said they had ever faced difficulty in finding water for household purposes for about 3 months on average per year. The longest duration was 5 months in one year, faced by households in Center Sumba.

In general, main reasons of difficulty to find water for household purposes are 'Long dry season' (54%) and 'dryness on the water source/well" (36%). Specifically East Sumba, difficulty in finding water was also caused by 'broken, clogged or leaky pipes' (53%, and 'dryness on the water source/well' (41%). In East Sumba, duration of difficulty to find water is only 1 month on average – shorter than in the other three districts.

In West Sumba District, difficulty to fond water is not only experienced during the dry season, but also during the rainy season. Oftentimes, when rainy season comes, the water sources/wells can not be used, because they are covered or filled with mud (11%).

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : total respondents	580	88	194	54	244
Yes	45%	22%	37%	65%	55%
Average duration of difficulty to find water (month per year)	3	3.5	1	5.1	3.4
No	55%	78%	63%	35%	45%
Reasons of difficulty to find	l waer				
Base :	260	27	80	19	134
A Long dry season	54%	67%	19%	84%	68%
The water source/well dried	36%	26%	41%	37%	34%
The pipe is broken, clogged or leaky	17%	0%	53%	0%	1%

Table 4.11 c. Percentage of Households who face difficulty in finding water for their families within the past one year.

Have no money for buying water	4%	0%	0%	0%	7%
When flooding and raining, the water is muddy	1%	11%	0%	0%	0%
Water is not delivered by the water truck driver	2%	4%	0%	0%	2%
The water truck does not serve retail purchase	1%		0%	0%	1%

4.12. Family nutrition

Having a breakfast is habitual for only a half (55%) of the total 580 sample households --with the highest is found in Center Sumba (67%).

Generally, the consumed foods are cooked a few moments before the eating time. Possibly, it is because menu for their meal is very simple, either in term of items of menu or in the cooking process. Mostly, daily menu for people in Sumba Island only consists of rice, corn or cassava, mixed with coconut scraps or even only mixed with salt. Sometimes, the menu is added with vegetables from their yards, or with salted fishes or fresh fishes. For them, then, they will only have protein from meat during traditional events or ceremonies. That is why the nutrition adequacy level in Sumba Island is quite low –among 4,518 under-5-y.o kids weighed, it appears that some 8.5% of them are in poor nutrition condition or under weighed³¹

Table 4.12 a. Frequency of having meal in a day.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base	580	88	194	54	244
Have a meal in the morning	55%	51%	51%	67%	58%
Have a meal at noon	94%	90%	99%	98%	92%
Have a meal In the afternoon/evening	100%	100%	100%	100%	99%

Table 4	.12 b.	Meals	preparation	
1 4010 1		moulo	proparation	

	Morning meal	Noon meals	Afternoon/evening meals
Base	321	548	578
cooking it	96%	94%	97%
only heating it	4%	4%	3%
eat it as it is	1%	1%	1%

³¹ Health Office of East Nusa Tenggara Province, 2011

Picture : Female & children at Sumba Island



4.13. Sanitation

a. Latrine facility used

Health problem caused by night soil contamination is potentially to break out among people in Sumba Island. It is because most of households (57%) in the island do not use adequate latrine facilities, 41% households are habitual to defecate in an open land/yard, and 13% households use public latrine with waste canal to open drain around their houses (particularly in West Sumba – 22%)

able 4.12 a.	Latrine facilit	y used
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	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base :	580	88	194	54	244
Domestic latrine with protected/covered septic tank	43%	30%	41%	26%	52%
Open land/yard	41%	48%	51%	48%	30%
Public latrine with waste canal to fishpond, drain	13%	22%	6%	11%	15%
Domestic latrine with waste canal to fishpond, drain	3%		3%	15%	2%
River	1%	1%	3%		
Neighbor's latrine	1%	1%	2%		0%

b. Kitchen condition

Kitchens of almost all respondents, generally, are in poor condition. It is as indicated from condition of the kitchen walls, which are slightly dirty (45%) or even quite dirty (44%). Ventilation of the kitchens is also bad (71%); particularly in West Sumba (89%). Generally, their cooking equipments and tableware are also very simple (see picture).

Moreover, condition of their kitchen equipment is slightly dirty (49%) or even quite dirty (30%). Poor condition of kitchen relates to habits of almost all respondents (98%) to use open fire/ firewood for cooking their meals.

Cleanliness of their water tanks is also poor, because 55% of respondent's water tanks are slightly dirty, and 23% are quite dirty.

Kitchen walls



Kitchen ventilation



Kitchen equipment

Water tank





Piicture : Condition of kitchen and cooking equipment and tableware – most of Sumba people.



c. Environment condition

Environment condition of majority respondents is also very inadequate. Some 67% households live with a lot of mosquitos flying around. House yards of 52% of the total 580 households are also full with a lot of trash, and animal dung (40%); even one may step on human feces when walking through back yard house, since it is still a common habit for 41% households to defecate in a bush of their back yard houses.

Particular in urban area, trash has become serious issue. Low awareness of the people toward hygiene causes too much garbage piles everywhere; whereas the people themselves seems comfortable with their dirty surroundings. (see picture).



Trash

Dung pile



Picture : Environment condition in urban area.



4.14. Family's health condition

Sumba Island is an endemic area for malaria disease. Therefore, 62% of the sample households said that one or two (average : 1.4) of their adult males on their household had suffered from malaria disease within the past 1 year. Demikian pula halnya dengan anggota keluarga females maupun anak-anak yang berusia \leq 13 tahun; 64% of the sample households said that one or two (average : 1.3) of their adult females on their household had suffered from malaria disease, dan 51% of the sample households also said that one or two (average 1.7) of their children had suffered from malaria disease within the past one year.

Prevalence of headache among males is significantly higher compared to females and children (100% vs. 78% vs. 34%); with average number of male, female and children suffering from headache from one household adalah 1.4, 1.3 dan 1.7.

Bad ventilation and poor cleanliness of their houses, added with lot of smokes inside their houses coming from using the firewood for their open fire stove are possibly the causes of high prevalence of respiration problem and eye problem among the people. Cough, breathing difficulties, eye redness and headache become quite common. Prevalence of cough among the males is somewhat higher than among the female (67% vs. 63%) –most likely, it is caused by high smoking habits among male members of families (please also see: *family expenditure for cigarettes; section 4.10*).

Prevalence of diarrhea among children with age of \leq 13 years old is quite high within the past 1 year, namely at 21%. This disease is suffered by nearly all children in the families (1.6 children – from the average 2.4 children with age of \leq 13 years from the families).

	Ma	Males Females Children (≤ 13		13 y.o)		
Base : 580 households	incidence	Avg *	incidence	Avg *	incidence	Avg *
Headache	100%	1.4	78%	1.3	34%	1.7
Cough	67%	1.4	63%	1.3	46%	1.8
Malaria	62%	1.4	64%	1.4	51%	1.7
Eye redness	21%	1.3	23%	1.4	18%	1.8
Breathing difficulties	15%	1.1	13%	1.1	8%	1.2
Diarrhea	14%	1.2	15%	1.2	21%	1.6
Eye infection	10%	1.2	9%	1.3	8%	1.8
Dengue	2%	1.2	2%	1.4	4%	1.3
Fire related accident	2%	1.1	2%	1.2	3%	1.1
Tuberculosis	1%	1.0	1%	1.1	1%	2.3

*) Average sufferer in 1 Household – counted only from family whose members suffered from the respected disease.

CHAPTER - V GENDER EQUITY

5.1. Time allocation

Although 96% households in Sumba Island own livestock, but apparently their times are not much spent for raising the livestock, especially large livestock like cows, horses and buffalos. Meanwhile, children (either boy or girl) with age of younger than 13 years old seem minimally involved in raising the livestock or in domestic work activities. Such minim involvement of the children in domestic work is quite understandable, because for their cooking activities, they tend to only cook very simple and not varying menu; and families in Sumba Island also tend not to pay much attention to cleaning their houses.

Apparently, families in Sumba Island have already set specific role of their family members for taking care of the livestock. For example, adult male is respondent for handling large livestock like cows, horses, and buffalos (32%), with average time allocation of 90 minutes per day. Meanwhile, adult female is responsible for taking care of small livestock like pig, and poultry (78%), with average time allocation of 37 minutes per day.

Activity of fetching water, generally, becomes the responsibility of female (76%) than male (48%). Since there are 84% families that have to fetch water from outside their houses, so it can be concluded that 40% of the families only rely on their female members to meet the need of waters for their families. Meanwhile for 36% families, the fetching of water to meet the need of waters for their families is carried out together by adult male and adult females. For the other 8% families, however, the responsibility to fetch water for their families is only on the adult male members. On average, activities of fetching water take about 54 minutes per day.

Activities to collect dung for fertilizer or to collect dung and place it in a certain location is not common for people of Sumba Island. Generally, either males or females take relatively similar role in cleasing/collecting the dung (male 23%, and female 20%); with time allocation of: 29 minutes vs. 25 minutes per day).

It is also not common for them to collect fodder/grass for their livestock, because they usually leave their livestock to grass on savanna; but still involvement of adult females in these activities is nearly equal with adult males (33% vs. 39%, with time allocation of: 38 minutes vs. 42 minutes). Next, for collecting firewood, adult females take same involvement with adult males (66% vs. 73%, with time allocation of: 43 minutes vs. 46 minutes).

Activities of cooking and cleaning the cooking equipment definitely become responsibilities of adult females. On average, activities of cooking take about 99 minute per day. Meanwhile, activities of regularly cleaning the bath room are not becoming a habit for majority of families in Sumba Island.

Next, involvement for children education tends to involve the females more than the males (62% vs. 39%). Yet, habit of the children to repeat their school works at home is still very low. Only 36% of boys and 37% of girls with age of younger than 13 years are habitual to review their school work again at home, regularly.

	Adult male	Adult female	Boys (< 13 v.o)	Girls (< 13 v.o)
Base : total households	580	580	<u>580</u>	580
Keep livestock (big : horse, cow, etc)	32%	7%	2%	0%
Average time consume/ day (minutes)	90	61	153	30
Keep livestock (small : pig, poultry)	44%	78%	5%	6%
Average time consume/ day (minutes)	32	37	39	26
Fetching water	48%	76%	12%	14%
Average time consume/ day (minutes)	54	53	44	47
Collecting/cleaning the dung	23%	20%	3%	2%
Average time consume/ day (minutes)	29	25	19	19
Collecting fodder/grass (if any)	39%	33%	5%	3%
Average time consume/ day (minutes)	42	38	34	30
Collecting firewood (if any)	73%	66%	10%	10%
Average time consume/ day (minutes)	46	43	47	48
Cooking	14%	97%	2%	7%
Average time consume/ day (minutes)	61	99	64	102
Washing utensils	4%	93%	2%	7%
Average time consume/ day (minutes)	21	31	20	27
Cleaning the bathroom	6%	12%	1%	2%
Average time consume/ day (minutes)	20	21	40	24
Involvement for children education	39%	62%	NA	NA
Average time consume/ day (minutes)	37	31	NA	NA
Studying again at home	NA	NA	36%	37%
Average time consume/ day (minutes)	NA	NA	51	51

Table 5.1. Division of works in family and the time allocation

5.2. Gender in ownership of asset

Generally in Sumba Island, valuable assets are owned by both the husband/male and wife/female of family.

Although 62% families said that their houses are belonged to both male and female, but there are 27% respondents who said that their houses are belonged to the male; and only 5% who said that their houses are belonged to the female. Ownership of house by male is dominant in East Sumba and Southwest Sumba (33% and 30% respectively).

Regarding the farming land, there are 88% households who own agriculture lands. Similar with ownership of house, 56% households said that the agriculture land is belonged to both the male and female, and 28% households said that their farming land is belonged to male; and only 4% households said that their farming land is belonged to female. Thus, ownership of farming land tends to be dominated more by male than female –this particularly shows in East and Southwest Sumba. Same tendency also occurs for ownership of livestock.

Descriptions shown above are strong indication that males have higher access to the valuable asset than females.

		Asset						
	House	Farming land	Live stock (excluding poultry)	Poultry	Motor cycle	Car		
Base	580	580	580	580	580	580		
Owned by the household	94%	88%	76%	79%	19%	1%		
Belonged to male	27%	28%	16%	13%	7%			
Belonged to female	5%	4%	4%	4%	1%			
Belonged to both	62%	56%	56%	62%	11%	1%		
Owned by others	6%	7%	6%	4%	3%	0%		
None		5%	20%	18%	78%	99%		

Table 5.2.a. Gender in ownership of asset.

Table 5.2.b. Ownership of the house

	Total	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base	580	88	194	54	244
Owned by the household	94%	91%	91%	98%	96%
Belonged to male	27%	11%	33%	19%	30%
Belonged to female	5%	6%	9%	2%	2%
Belonged to both	62%	74%	48%	78%	64%
Owned by others	6%	10%	9%	2%	4%

Table 5.2.c. Ownership of farming Land

	Total	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base	580	88	194	54	244
Owned by the household	88%	89%	81%	96%	92%
Belonged to male	28%	22%	30%	19%	30%
Belonged to female	4%	7%	7%	2%	2%
Belong to both	56%	60%	44%	76%	61%
Owned by others	7%	9%	7%	4%	7%
Don't have it	5%	2%	12%	0%	1%

Table 5.2.d. Ownership of Live stock (excluding poultry)

	Total	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base	580	88	194	54	244
Owned by the household	76%	73%	76%	83%	75%
 Belonged to male 	16%	6%	18%	15%	18%
 Belonged to female 	4%	1%	8%	2%	3%
Belong to both	56%	66%	50%	67%	54%
Owned by others	6%	5%	3%	4%	10%
Don't have it	20%	23%	22%	13%	18%

5.3. Role of females in decision making process

In Indonesia, amount and allocation of daily consumption expenditure are set by females. This same condition also occurs for people in Sumba; where 51% households said that amount and allocation of their daily consumption expenditure are determined by females. Nevertheless, there are 13% households who said that the male play dominant role in deciding allocation of expenditure for daily consumption goods of their families.

Selection of energy used by the household (e.g.: installing electricity, whether or not using LPG gas stove, etc), generally, is determined together by the males and females (53%). Meanwhile, 31% households said that the males play dominant role, and only 13% households said that the females play dominant role in selection of energy used by their families.

For other important aspects in families, generally, the decision is <u>determined together by the male</u> and female. The other aspects are, among other:

- Decision for children education (68%).
- Decision for the use of agriculture and husbandry result, whether it is stored or sold (67%).
- Decision for the sales price of agriculture and husbandry result (57%)
- Decision for purchasing cattle (60%)
- Decision for purchasing a land/house (65%).
- Decision for purchasing expensive goods like TV, motorcycle, etc (54%).

Based on experiences from several social organization in Sumba Island, nevertheless, it appears that the males or husbands have very dominant power in making decisions, not only for their family but also for social community in Sumba Island. Therefore, for the decision making process, the role of females is merely as advisor, whereas the final decision is on the hand of their husbands (males).

For few households, nevertheless, it appears that females also play important role in making a decision.

Meanwhile, regarding the decision in determining the sales price of agriculture/husbandry results, it reveals that 13% does not have any role in determining the sales price; because the prices are fully determined by traders.

	Adult male/head of family	Adult female/wife	Both (Male & Female)	Other	No activity
Daily consumption expenditure	13%	51%	36%	0%	
Selection of energy used (e.g.: installing electricity, whether or not using LPG gas stove, etc)	31%	13%	53%	0%	4%
Children education aspects (e.g.: selecting a school, allowing or disallowing children to have higher education, etc)	18%	8%	68%	0%	5%
The use of agriculture/husbandry results (should it be stored for reserves, or sold to market)	22%	9%	67%	0%	1%
Determining the sales prices of agriculture/husbandry results	22%	8%	57%	13%	0%
Purchasing livestock/cattle	27%	7%	60%	2%	4%
Purchasing a land/house	25%	5%	65%	0%	6%
Purchasing other expensive goods (e.g.: TV, motorcycle, electronic goods)	25%	5%	54%	0%	17%

Table 5.3. Role of females in decision-making process

5.4. Involvement in community activities

There is indication that involvement in community meetings among people of Sumba Island is quite high, particularly in cultural ceremony-related meetings. Some 78% of males and 71% females from total 580 sample households said that they had participated in those meetings, with frequency of 4.3 times for males and 3.8 times for females in the past 1 year.

In attending meetings carried out by local apparatus; namely in meetings at Village/Kelurahan and RT/RW, adult males are more active than adult females. In fact, for the adult males, their frequency to attend the meetings is higher than of the adult females. From the total 580 households, percentage of adult males who ever attended meetings at Village/Kelurahan is 73%, with average frequency of 5.1 times on average in the past 1 year. Meanwhile; percentage of the adult females who ever attended the meeting is only 58%, with frequency of only 3.6 times on average in the past 1 year. Likewise, from the total 580 households, percentage of adult males who ever attended meeting at RT/RW is 68%, with frequency of 4.6 times on average in the past 1 year.

On the other hand, percentage of adult females and adult males to participate in religious meetings³² is similar, namely 56%; yet with slightly higher frequency for adult females than for adult males (6.1 times on average for the females, and 5.2 times for the males – in the past 1 year).

	Incidence		Avg. Frequency - past 1 year	
	Male	Female	Male	Female
Attending a meeting at Village / Kelurahan	73%	58%	5.1	3.6
Attending a meeting at RT /RW	68%	53%	4.6	3.3
Attending religious meetings (excl. regular worship)	56%	56%	5.2	6.1
Attending traditional/cultural ceremony	78%	71%	4.3	3.8

Table 8.2 . Involvements of males and females in community meetings

5.5. Vulnerable group

From interviews with respondents, it shows that valuable assets of families in Sumba Island are owned together by males and females; important decisions in families are also made together by males and females. Respondents also said that many females took participation in social community meetings, though the number and frequency are lower than males. Several non government organizations in Sumba Island also admitted that there are a lot of progress on females' role in the family and community; but still, the power of females in making important decisions in families and in society is actually very limited, because in most parts, females only took participation as listeners or advisors only. This relates to the strong patriarchy culture in Sumba people.

³² Religious meeting is a collective religious gathering but not merely for a worship activity.

Some people in Sumba believe that a girl who has not married after reaching the age of 20 years is a disgrace for her family. Therefore, a forced marriage often occurs in the island.

The caste system is also influencing the practice of forced marriages, which oftentimes only bring disadvantages for the females. For the reason to preserve the caste of their family or to gain respects from others, parent will force their daughter to marry a man from higher or richer caste.

There is also a belief for most people of Sumba that the first boy in family is better than the first girl is, because the boy will bring more fortunes and carry the family name in the future.

In Sumba people, it is also a habit to marginalize a widow or old maid, especially if their economic condition are poor. For example during a traditional ceremony like wedding party, a widow or old maid is often kept away from attention. Her name is never stated for *urakha* (food allotment).

In such strong caste system, then, traditional figures and people from higher caste have bigger opportunities to take high position in government bureaucracy structure. These groups can also have more opportunities to access in strategic points, such as economy, education, and health. Therefore, based on experiences of non government organizations in Sumba Island, the very vulnerable and marginalized groups in Sumba Island are groups from low caste (anak belis), the poor (usually Ata group whose income source is only from cultivation in a small land); and the females. The low caste and the poor, usually, are far distantly involved in the decision making process at village or tradition level. Meanwhile, the female group is overlooked during the budget allocation process or in the village development planning.

CHAPTER - VI

AGRICULTURE AND HUSBANDRY PRACTICES

6.1. Number of land owned vs. land cultivated for farming

People of Sumba Island rely largely on the farming activities. Therefore, there are only 4% households that do not do any farming at all –and mostly found in West and East Sumba District (5% and 8% respectively)

Regarding the farming activities, it reveals that almost all respondents do the farming activities on their own lands (93%); and only 4% respondents who do farming activity on the leased lands.

In general, the range of farming lands cultivated by farmers are varying, from 0 to 500,000 sqm. (there are 2 farmers who do not cultivate, but leasing their own land to other farmers –thus, for these 2 farmers, their cultivated land is 0 sqm). From the total samples, 50% of them cultivate less than 5,000 sqm of lands, 25% cultivate 5,000 to 10,000 sqm, and the other 25% cultivate 10,001 to 500,000 sqm of lands.

Highest disparity in the cultivated lands is found most in Center Sumba, where 25% of the total samples cultivate less than 5,000 sqm of lands; 50% samples cultivate 5,001 to 20,000 sqm of lands and the other 25% cultivate 20,001 to 250,000 sqm of lands. High disparity in the cultivated lands is also found in Southwest Sumba, where 25% of the total samples only cultivate less than 5,000 sqm of lands; 50% samples cultivate 5,001 to 10,000 sqm of lands and the other 25% cultivate 10,001 to 500,000 sqm of lands

In total, there are 25% samples who choose to abandon their land without cultivated. Total areas of their lands are ranging from 5,000 to 100,000 sqm. Generally, the lands are abandoned because of condition of the soils and inadequate supply of water for the land, which in turn make the lands not potential or not beneficial to work on.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base: Total respondent	580	88	194	54	244
HHs who do farming	96 %	95%	92 %	100%	99 %
Do farming, on their own lands.	93%	95%	87%	96%	95%
Do farming on leased lands.	4%	8%	3%	6%	4%
Do farming on other person's land - through profit-sharing	2%	2%	2%	2%	1%
Do farming on Maramba's land	1%	1%			1%
Do farming on the state land (Tanah Negara)	0%		1%		
Not do farming at all	4%	5%	8 %		1%

Table 6.1 . Lands for farming activities

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
TOTAL LAND CULTIVATED vs	S. NON CULTIVATED	I			
CULTIVATED LAND (sqm)	557	86	179	54	238
Average	12,982	11,364	11,807	25,188	11,681
• Median	5,000	7,500	5,000	10,000	5,000
• Min	0	0	0	125	125
• Max	500,000	100,000	80,000	250,000	500,000
• Q1	5,000	2,125	2,500	5,000	5,000
• Q.3	10,000	10,000	15,000	20,000	10,000
Std Dev	28,486	15,892	15,465	45,798	33,568
NON CULTIVATED LAND (sqm	n)				
• Average	4,301	2,948	5,389	5,463	3,709
Median	-	-	-	-	-
• Min	-	-	-	_	-
• Max	100,000	100,000	80,000	30,000	40,000
• Q1	-	-	-	_	-
• Q.3	5,000	500	10,000	10,000	5,000
Std Dev	9,615	11,404	10,980	8,796	7,756

6.2. Type of crops cultivated

Although Sumba Island is known as Sandalwood Island, but in reality sandalwood tree is only planted by less than 1% (0.2%) of total population of the island; despite high commercial price of the commodity in the market.

Farmers in Sumba Island plant varying types of crops/trees. On average, one farmer plants 7 - 8 types of crops/trees. There are 87% farmers do the farming activities for commercial purposes, meanwhile the other 13% do farming activities for meting consumption of their family only.





From 557 farmers' households who do farming activities (96% of total sample); it reveals that 28% of them sell non-transformed³³ products, 28% sell transformed³⁴ products, 30% sell both transformed & non-transformed products.

Generally, the cultivated products are food corps, like corn (91%), rice (70%) and cassava (69%); but most of them, used the result for their own consumption only. The cultivated products are planted for selling, mostly are plantation crops like cashew nuts, coconut, candlenut, and coffee. Cashew nuts are sold without being processed first (on in non-transformed form); meanwhile some of the other three crops are sold after going through specific processes. Coconut is transformed to copra before it is sold to the market; candlenut is peeled out before it is sold, and coffee is processed to become powder coffee before it is sold to the market.

Some farmers plant banana (51%), and 18% sold it in non transformed product, and 3% sold in transformed product.

³³ Sold, without being processed at all.

³⁴ Sold, after it is firstly processed, such as by cooking, peeling, grounding, etc

	Cultivated	Sold in non transformed	Sold in transformed
Base :	557	557	557
Corn	91%	7%	3%
Rice	70%	2%	
Cassava	69%	3%	3%
Coconut	54%	4%	22%
Banana	51%	18%	3%
Candlenut	40%	8%	28%
Cashew Nuts	40%	29%	5%
Fruits (all types)	37%	4%	1%
Coffee	35%	3%	12%
Vegetables (all types)	33%	3%	0%
Areca	29%	6%	7%
Pineapples	21%	2%	
Bamboo	20%	2%	0%
Peanuts	20%	3%	3%
Taro / tuber	20%	2%	1%
Kapok	19%		2%
Petatas / Sweet potato	17%	0%	0%
Cocoa / Chocolate	15%	1%	6%
Kusum (Kesambi)	13%	1%	0%
Resin	7%	0%	0%
Mahogany	7%		0%
Teakwood	5%	1%	
Sugar cane	5%		
Sorghum (jagung rote watar pia)	5%		0%
Jatropha Curcas (Jarak pagar)	5%		
Sirih (<i>piper betle</i>)	4%	2%	0%
Gamal	4%		
Moringa (kawona)	3%		
Lontar (Borassus flabellifer)	3%	0%	8%
Others	19%	5%	2%
None		41%	41%

Table 6.2 b : Type of crops cultivated & sell

6.3 Types and total number of livestock owned

The most common livestock raised by households in Sumba Island are pig (81%), poultry (81%) and dog (53%). That is why these three livestock, particularly pig, are the most common livestock used for traditional ceremonies, especially for pig (39%).

Within the last 1 year, half of those who raise pig (39% of 81%), had sent 3 pigs for traditional ceremonies; this number is higher than number of pig currently owned by the family (2 pigs). Meanwhile dog and poultry are not only used for traditional ceremonies, but also for daily consumption, particularly to be served to visitors or relatives who come from a far place.

For few of the households, apparently, their livestock are not belonged to them, but belonged to their relatives. They raise the livestock through profit-sharing system. As shown from the following table (*table 6.3a*), 10% households raise pigs that are belonged to others. Regarding the profit-sharing system in raising the animals, usually, half of newborn animal delivered from the raised animal will be given to them, and the other half will be given to owner of the raised animal.

From the total 580 sample households, there are only 18% who raise horses and 19% who raise buffalos. One third (1/3) of those who raise horses or buffalos have used these animals for traditional ceremonies within the past 1 year, with average use of 2 horses and 3 buffalos.

From qualitative survey, it reveals that main purpose to raise horse and buffalo (and also pig and cow) for families in Sumba Island is so they can be presented in traditional ceremonies. Selling a cattle is only for an urgent need for money, and is not the main purpose in raising cattle.

The use of cattle for traditional ceremonies is mainly for strengthening social status of the owner. That's why that the skull of cattle, particularly horse, cow and buffalo, will always be displayed in front of the owner's house.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : total households	580	88	194	54	244
Pig					
Keep/raise	81%	81%	74%	83%	87%
Owned	75%	74%	72%	81%	76%
Other's own	10%	17%	2%	2%	16%
For ceremony	39%	32%	36%	43%	44%
Goat/sheep					
Keep/raise	21%	10%	23%	24%	22%
Owned	19%	9%	23%	22%	18%
Other's own	3%	2%	1%	2%	4%
For ceremony	5%	15%	2%	26%	7%

Table 6.3.a. % households that raise, own, and use livestock for traditional ceremonies in past 1 year.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba			
Horse								
Keep/raise	18%	17%	25%	30%	9%			
Owned	17%	16%	25%	30%	9%			
Other's own	0%	1%	1%	4%	0%			
For ceremony	5%	5%	5%	15%	2%			
Cow								
Keep/raise	11%	2%	27%	9%	3%			
Owned	11%	1%	26%	9%	2%			
Other's own	1%	1%	1%	6%	2%			
For ceremony	2%	6%	2%	4%	2%			
Buffalo								
Keep/raise	19%	15%	27%	15%	16%			
Owned	19%	15%	25%	15%	16%			
Other's own	0%	2%	1%	2%	0%			
For ceremony	6%	8%	2%	7%	7%			
Poultry								
Keep/raise	81%	85%	79%	87%	79%			
Owned	79%	84%	77%	87%	77%			
Other's own	3%	8%	1%	17%	1%			
For ceremony	37%	17%	32%	30%	48%			
Dog	Dog							
Keep/raise	53%	52%	49%	44%	57%			
Owned	51%	51%	47%	44%	55%			
Other's own	2%	2%	5%	11%	2%			
For ceremony	8%	3%	6%	6%	12%			

Table 6.3.b Average number of livestock raised, owned, and used for traditional ceremonies in the past 1 year.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Pig					
Raised	2.4	2.2	2.7	2.2	2.3
Owned	2.4	2.1	2.7	2.2	2.3
For ceremony	2.8	2.3	3.5	1.6	2.7
Goat / sheep					
Raised	2.8	2.3	3.8	1.6	2.4
Owned	2.8	2.1	3.6	1.7	2.5
For ceremony	1.8		1.8	1.3	1.9

Horse							
Raised	3.1	1.2	4.8	1.6	1.6		
Owned	3.0	1.2	4.6	1.6	1.4		
For ceremony	2.3	3.8	2.7	1.1	2.2		
Cow							
Raised	3.0	1.5	3.2	1.4	2.9		
Owned	2.9	2.0	3.1	1.4	2.5		
For ceremony	1.0		1.0	1.0	1.0		
Buffalo							
Raised	2.4	1.9	3.4	1.4	1.4		
Owned	2.3	1.9	3.3	1.4	1.4		
For ceremony	3.3	1.9	1.5	1.3	4.8		
Poultry							
Raised	6.0	5.6	8.0	5.5	4.6		
Owned	5.9	5.3	8.3	5.5	4.4		
For ceremony	6.4	5.6	4.5	10.5	7.0		
Dog							
Raised	2.4	2.3	2.3	3.0	2.3		
Owned	2.3	2.2	2.4	3.0	2.2		
For ceremony	2.4	4.0	2.3	2.0	2.3		

Pic: skull of buffalo displayed in front of house



6.4. Habits to stable livestock, and the dung management

Pigs are the most common livestock raised in cage all days or zero grazing (76%), meanwhile other animals such as goat/sheep, horse and buffalo are only common to be stabled at night only. Cows and poultry are more common to let freely in house yards or in the grass field, all night and days.

Cages for pigs and poultries are placed close to the household's houses. Meanwhile, cages for horse are generally slightly farther (16.3 m from house on average); and cages for buffalo and cow are placed even farther from house (18.5 m and 42.1 m on average).

Among those whose cattle (excluding poultry) are not stabled, there are only 62% of them who are willing to stable their cattle, if asked. Generally, reason for those who refuse to stable their animals is that the stabling will only bring more burdens, since they have to provide animal feeds and drinks for the stabled animals.

	Pig	Goat/ sheep	Horse	Cow	Buffalo	Poultry
Base : total household	471	117	103	65	106	465
Stabling all day (zero grazing)	76%	18%	25%	17%	22%	2%
Stabling only at night	12%	69%	45%	26%	52%	2%
Not stabling at all	12%	13%	30%	57%	26%	96%
Distance between the cage and house (Avg - m)	9.7	11.1	16.3	42.1	18.5	7.7

Table 6.4 a : Habits to stable livestock

Willingness to stable the livestock (n = 218)



Pic : Pig cage

Pic : horse in the house yard





In general, the use of animal dung for fertilizer purpose is still low. The use of dung from the stabled pigs for fertilizer purpose is only 34%; meanwhile the use of dung from goat/sheep for fertilizer purpose is higher (50%) – but unfortunately, there are only 21% households who raise the goat/sheep (*see table 6.3a*). Commonly, the dung is only left where it is, and making the surrounding area of the house very dirty.

	Pig	Goat/ sheep	Horse	Cow	Buffalo	Poultry
Base : total household	471	117	103	65	106	465
Do nothing/ leave where it is	63%	50%	69%	74%	66%	96%
Use as fertilizer	34%	50%	30%	25%	33%	3%
Dump into forest	3%	1%	2%	3%	2%	0%
Others (dump into open drain/lake/river)	4%	3%	1%	2%	1%	1%

Table 6.5 b : Dung management

6.5 Income from agriculture and animal farming

6.5.1 Income from agriculture

Farmers who do not earn any income from agricultural results at all, are found most in East Sumba district (21%) and Center Sumba (20%). Meanwhile in West Sumba district, there are only 14% farmers who do not earn income from any agricultural results; whereas for South West Sumba, there are only 5%. Most of these people are earning money from working as laborers, traders, civil servants.

In total, 28% farmers **only** sell their agriculture results in the form of non transformed products; and 28% other farmers sell in the form of transformed products (such as: in peeled, pounded form, etc).

Meanwhile other 30% farmers sell their agriculture results both in the form of transformed and non transformed products. In such situation, then, it is certain that incomes of farmers from agriculture results are very varying.

It reveals that revenues from selling transformed products is slightly higher than from selling nontransformed products. On average, amount of income earned by farmers from selling the nontransformed products is IDR 776,369 per year; and from selling transformed product is IDR 819,964 per year. The dispersion revenue from selling non transformed products, however, is bigger compared to the revenue from selling transformed product. Some 50% farmers only earn revenues of less than IDR 120,000, and the other 50% farmers receive IDR 120,000 to 54,250,000 per year from selling non-transformed product. 50% of total farmers who sell transformed products receives IDR 225,000, and the other 50% receive between IDR 225,000 to 17,600,000 per year.

The amount of income, apparently, depends largely on the type of plants they cultivate. For example, in East Sumba, farmers can earn income of up to IDR 54,250,000 per year from their 30,000 sqm lands, which is cultivated with sandalwood trees.

Generally, farmers in Center Sumba earn better revenues from agriculture results than farmers in other districts do. On average, their revenue from agriculture results is IDR 2,295,954 per year; with 50% sample can earn IDR. 275,000 to IDR 3,525,000 revenues per year.

In contrary, farmers in West Sumba earn the lowest revenues from agriculture results, compared with farmers from the other 3 districts do. On average, the revenue is IDR 1,093,186 per year; with 50% sample can only earn IDR 177,500 to IDR 1,200,000 per year. Nevertheless, income distribution from agriculture results among farmers in West Sumba is more even than in the other four districts.

However, regarding the amount of income received from selling agricultural results, we need to be careful; because during data collection process, farmers always faced difficulty to mention the amount of money they received from selling the agricultural results. It is because some of the farmers tended to sell their agriculture results not in regular frequency, but depending on whether they need money or not - at that time.
Table 6.5 1 : Income from agriculture

	Total	West Sumba	East Sumba	Center Sumba	Southwest Sumba				
Base : Farmers	557	86	179	54	238				
Not selling agriculture results at all	13%	14%	21%	20%	5%				
Sell in non transformed only	28%	20%	36%	24%	26%				
Sell in transformed only	28%	40%	22%	9%	34%				
Sell in both (non + transformed)	30%	27%	21%	46%	35%				
Selling non transformed product per	year (IDR)								
Mean	776,369	218,547	836,207	1,585,139	749,429				
Median	120,000	0	100,000	625,000	290,000				
Min	0	0	0	0	0				
Мах	54,250,000	3,470,000	54,250,000	8,050,000	12,500,000				
Q1	0	0	0	0	0				
Q3	700,000	180,000	550,000	2,637,500	1,000,000				
StDev	2,656,191	523,953	4,205,161	2,061,714	1,398,641				
Selling transformed product per yea	r (IDR)								
Mean	819,964	874,640	699,168	710,815	915,824				
Median	225,000	312500	0	160,000	445,000				
Min	0	0	0	0	0				
Мах	17,600,000	10,300,000	14,000,000	6,000,000	17,600,000				
Q1	0	0	0	0	0				
Q3	857,000	1,012,500	580,000	850,000	1,018,500				
StDev	1,836,024	1,538,153	1,982,568	1,259,441	1,931,043				
Total revenue/year from agriculture	(IDR)								
Mean	1,596,333	1,093,186	1,535,374	2,295,954	1,665,252				
Median	800,000	600,000	500,000	1,250,000	1,050,000				
Min	0	0	0	0	0				
Max	54,250,000	10,300,000	54,250,000	11,800,000	17,600,000				
Q1	255,000	177,500	65,000	275,000	500,000				
Q3	1,750,000	1,200,000	1,200,000	3,525,000	2,000,000				
StDev	3,213,279	1,631,800	4,645,251	2,596,842	2,311,317				

6.5.2 Income from livestock

Although nearly all of the sample households (96%) have livestock to raise; but for most of them (61% from total livestock farmers) - their animals have no economical value at all. Their livestock, actually, are only mainly used for traditional ceremonies (*see section 6.3 also*); only 39% of the total 558 livestock farmers can earn incomes from their livestock. This is contrary to a fact that the livestock farming is actually the most potential sector to be developed in Sumba Island, due to the wide areas of savanna in the island.

Livestock as source of income only shows significant in East Sumba District, where 52% of total 184 livestock farmers use their livestock as their source of income, not only as a mean for participation in traditional ceremonies. In East Sumba, livestock farmers can earn maximum income of IDR 61,500,000 per year from their livestock. Unfortunately, dispersion income among livestock farmers from selling livestock is also quite significant, because 75% of livestock farmers only earn less than IDR 1,500,000 per year.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : Total HH	580	88	194	54	244
HH: raise animals	96%	96% 99%		98%	96%
HH: not raise animals	4%	4% 1% 5%		2%	4%
Base : Livestock farmers	558	87	184	53	234
% of HH: earn income from livestock	39%	31%	52%	38%	33%
INCOME per year (IDR) – amo	ong livestock farr	mers			
Mean	1,000,484	376,782	1,971,060	1,345,472	391,047
Median	0	0	10000	0	0
Min	0	0	0	0	0
Max	61,500,000	4,800,000	61,500,000	10,000,000	7,000,000
Q1	0	0	0	0	0
Q3	500,000	100,000	1,500,000	3,000,000	300,000
StDev	3,646,727	927,152	5,982,807	2,199,417	996,051

Table 6.5.2 : Average income/year from livestock

6.6 Agricultural/husbandry inputs

• Agricultural inputs

Although almost all of the sample households are farmers, but there are only 74% of them who usually spend specific amount of money for their agricultural inputs. In general, farmers in West Sumba tend to use more varieties of agricultural inputs, than farmers from other districts do. That's why the cost spent by farmers in West Sumba is the highest, compared with costs spent by farmers from other districts.

For those who have spending in agricultural inputs (74% of total 580 sample), average total expense for agricultural input is IDR 513,194 per year; with the highest average expense is in West Sumba (IDR 694,851 per year) and the lowest average expense is in Southwest Sumba (IDR 368,435 per year).

Although all farmers grow crops or rice, but actually only 16% of them bought seeds within the past 1 year, with average spending of IDR 169,913 per year. The farmers, generally, use seeds from their previous harvests.

The most commonly used agricultural inputs are pesticide. Here, 51% farmers use the inputs, with average spending of IDR 179,167 per year. , Farmers in Sumba Island are not accustomed to use fertilizer for their cultivated lands, nor to use organic fertilizer (manure, compost) .Only 3% of total farmers in Sumba Island use organic fertilizer for their farms. In fact, chemical fertilizer is only used by only 30% farmers on average. The use of chemical fertilizer is only common for farmers in West Sumba (47%) and Southwest Sumba (41%); and rarely common for farmers in East Sumba (only 12%).

	Total	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : total household	580	88	194	54	244
Do farming activities	97%	100%	92%	100%	100%
Having expense in agriculture – any kind	74%	76%	77%	69%	73%
Total expense - avg (IDR)	513,194	694,851	598,115	566,892	368,435
Having expense in seeds	16%	20%	14%	10%	14%
Total expense - avg (IDR)	149,894	289,615	140,407	232,778	93,646
Organic fertilizers (manure, compost)	3%	7%	3%	2%	2%

Table 6.6 a. Agricultural input

	Total	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Total expense - avg (IDR)	196,875	115,000	310,000	115000	182,000
Chemical fertilizer (such as: Urea, ZA, TS, etc)	30%	47%	12%	20%	41%
Total expense - avg (IDR)	176,424	235,244	266,024	108,182	140,641
Pesticides	51%	53%	56%	9%	56%
Total expense - avg (IDR)	179,167	137,872	166,310	83,000	206,630
The paid labor	11%	30%	6%	19%	7%
Total expense - avg (IDR)	445,317	435,385	437,500	625,000	359,412
Renting tractor	27%	36%	31%	54%	14%
Total expense - avg (IDR)	541,882	445,313	797,696	376,207	358,143

o Husbandry inputs

In husbandry sector, although 96% own livestock, but only 51% of the farmers usually spend specific money for their husbandry inputs; with average spending of IDR 1,284,217.

Generally, husbandry inputs are spent by those who raise pigs – particularly for feeds and water of their pigs. Livestock farmers who have to buy feeds for their animals are mostly found in Southwest Sumba (59%) and East Sumba (50%). On average, however, livestock farmers in East Sumba spend more for buying animal feeds than livestock farmers in Southwest Sumba do (IDR 1,639,165 vs.IDR 1,280,457). Meanwhile, livestock farmers who buy water for their animal are mostly found in Southwest Sumba (12%), with average expenditure of IDR 1,072,386 per year.

Similarly, livestock farmers who usually buy antibiotics for their animal are mainly found in East Sumba (22% of the total 194 households or 24% of the total livestock farmers) and in Southwest Sumba (17% of the total 244 households or 18% of the total livestock farmers). With such condition, then, it is not too surprisingly that the highest expenditure for husbandry inputs is also found in East Sumba (IDR 1,639,165 on average) and in Southwest Sumba (IDR 1,280,457 on average).

Unfortunately, high expenditure spent for livestock inputs by livestock farmers in Southwest Sumba is not worth, compared with amount of income received from their livestock (if compared with other districts). It is because livestock's raised by farmers in Southwest Sumba are mainly used for traditional ceremonies (see table 6.3a, 6.3b and 6.5.2).

Table 6.6.b. Husbandry inputs

	Total	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : total household	580	88	194	54	244
Own livestock	96%	99%	95%	98%	96%
• Having expense for livestock	51%	35%	50%	46%	59%
Total expense – avg (IDR)	1,284,217	589,000	1,639,165	790,600	1,280,457
Having expense for feedstuff for livestock	42%	28%	42%	44%	48%
Total expense - avg (IDR)	1,285,911	613,440	1,860,444	787,500	1,132,776
Having expense for water	6%	1%	2%		12%
Total expense – avg (IDR)	953,612	50,000	106,667		1,072,386
Having expense for antibiotics for livestock	15%	3%	22%	6%	17%
Total expense - avg (IDR)	294,444	41,000	217,214	288,333	392,550

CHAPTER - VII ELECTRICITY USAGE

7.1. Electricity source

In total, 40% of the total 580 random sample households do not have electricity sources for their houses at all; either in form of connecting grid (provided by PLN³⁵), or in form of individual connection like SEHEN (Super Ekstra Hemat Energy or Super Extra Efficient Self Sufficient Energy), Solar panel – SHS, connection to a neighbor, village diesel generator, etc

The lowest penetration of electricity energy is in West Sumba District, where only 35% of total sample households own electricity energy, consisting of 17% that use PLN electricity – *connecting grid*, 14% using SEHEN and 5% use connection to a neighbor. Meanwhile, the other 65% of the households do not have electricity sources at all.

In another hand, **East Sumba District** becomes district with highest penetration of electricity energy, compared with the other three districts. In the district, 77% own electricity sources, consisting of 39% that use PLN electricity – individual connecting grid, 14% using SEHEN, 11% using SHS, 8% using village's genset, and 5% that use PLN electricity using connection with neighbors.

The highest usage of SEHEN is found in Center Sumba District (26%) and in Southwest Sumba district (29%). Specifically for the SEHEN, the survey found 2 respondents from random sampling method (1 respondent in East Sumba and 1 respondent in Southwest Sumba) who previously used SEHEN but now they don't have electricity source any longer, because their SEHEN have broken.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
BASE : random sample	580	88	194	54	244
None electricity source ³⁶	40%	65%	23%	30%	47%
PLN Electricity - connecting grid	25%	17%	39%	26%	16%
Solar panel - SEHEN	21%	14%	14%	26%	29%
Solar panel - SHS	6%		11%	11%	2%
Connection to a neighbor	5%	5%	5%	6%	6%
Genset in the village	3%		8%		1%
Individual genset	1%	1%	2%	2%	0%
Car battery (without solar panel)	0%			2%	

Table 7.1. Electricity source

JRI Research - Socio-Economic-Gender Baseline Survey, 2012

³⁵Perusahaan Listrik Negara (State Electricity Company)

³⁶ Here, non electricity sources are not only electricity sources from PLN

Notes :

For the purpose of analysis on satisfaction level toward SEHEN, experiences in using SEHEN³⁷, and interest to keep using SEHEN, booster respondents (i.e. SEHEN users) were interviewed for this 2nd survey. Booster respondents were selected from outside the selected RW³⁸ in the selected or non selected villages. Number of booster respondents is as follow :

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
SEHEN User (n)	61	10	20	6	25

7.2. Factors that make respondents not having any electricity source at all.

In the 2nd survey, those who don't have electricity source were asked about their reasons not to use electricity for their house. It reveals that the 1st reason for them not using the electricity is the tariff of electricity. Because the tariff is considered too expensive, so they can not afford to pay it (70% from the total 105 households with no access to any kind of electricity sources; or 27% from the total 268 randomly selected households in the 2nd survey).

The 2nd reason is because their places or villages are not covered by PLN's electricity network at all (28%); 3% said there are no information at all about electricity sources that they can access/use. And it also reveals that 31% of the total 105 households with no access to electricity (or 12% from the total 268 randomly selected households in the 2nd survey) have never heard of about SEHEN at all.

NEXT	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base :	105	20*	34	7*	44
Can not afford it, it's very expensive	70%	70%	68%	29%	77%
Because there is no electricity network	28%	20%	15%	71%	34%
Still waiting as promised by the village head	5%	15%	6%	0%	0%
No information from anyone	3%	15%			
Already sent request, but not yet approved Already sent requ	2%		3%		2%
Because the village only got few units of solar power	1%		3%		
Not yet realized, though already paid down payment	1%		3%		
Never heard about SEHEN	30%	35%	15%	71%	34%

Table 7.2. Reason for not having any of electricity source

*) The base is too small to read the data

³⁷ Super Ekstra Hemat Energy or Super Extra Efficient Self Sufficient Energy (Sola Panel).

³⁸ Rukun Warga, a lesser administrative unit in Village.

JRI Research - Socio-Economic-Gender Baseline Survey, 2012

7.3. Satisfaction toward electricity source

PLN becomes source of electricity with highest satisfaction level (92%) compared to the other electricity sources like connection to a neighbor (84%), Solar panel – SHS (90%), SEHEN (82%) and diesel generator in the village (90%).

Particularly for SEHEN, the lowest satisfaction level is in Center Sumba district, where only 70% of 20 household users felt satisfying, lower than the other three districts where the satisfaction level is greater than 80% (see table 7.2b)

	PLN Electricity - connecting grid	Connection to a neighbor	Solar panel - SHS	Solar panel - SEHEN	Individual genset	Genset in the village
Base : the user	144	31	31	183	4*)	20
Satisfied	92%	84%	90%	82%	50%	90%
Not satisfied	8%	16%	10%	18%	50%	10%

*) The base is too small to read the data

Table 7.3b.	Satisfaction toward	SEHEN (base	: random + booste	r respondent)
		1		, ,

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : user SEHEN	183	22	46	20	95
Satisfied	82%	82%	85%	70%	83%
Not satisfied	18%	18%	15%	30%	17%

Generally, reasons for those who dissatisfied with electricity source from PLN (11 respondents) are 'the frequently blackout' (64%) and 'Only use it for the night' (18%), and 'Too expensive' and 'The wattage use is often miswritten' (9% each).

Actually, PLN's frequently blackout is something common in Sumba Island; yet not a big problem for most people in the island; it is as proven from a fact that 92% respondents are still satisfying with PLN's electricity source. For people in Sumba Island, electricity is relatively exclusive and very valuable, so they tend not paying too much attention to the quality of service or quantity of the supply of electricity. Therefore, nearly all respondents (84% to 92%) felt satisfying with the electricity source they use or own– except for those who use individual diesel generator (only 50% felt satisfying, considered as not good value for money, since the high cost to buy diesel with limited with limited electicity to be used).

Dissatisfaction toward the use of other electricity sources is generally caused by the limited capacity– only for few 2 to 3 lamps (see *table 7.2c*).

Particularly for SEHEN, reasons stated by 33 dissatisfied user households (18% of 183 user samples) are the very limited usage capacity (64%) –only for 2 to 3 lamps--; and the frequently black out due to inadequate storage capacity of the batteries (18%).

	PLN	connection to a neighbor	SHS	SEHEN	Individual genset	Village's genset
	11*)	5*)	3*)	33	2*)	2*)
Frequently blackout	64%	20%		18%		50%
Only use it for the night	18%	20%		3%		
Too expensive	9%	20%		3%	50%	
The wattage use is often miswritten	9%					
The use is limited		40%	100%	64%	50%	50%
Difficult to clean solar glass panel				3%		
Depending on the weather				3%		
2 lamps went out				3%		
The light is less bright				6%		

Table 7.3c. Reason for dissatisfaction

*) The base is too small to read the data

7.4. Interest to own SEHEN

The 2nd survey shows that from the total 268 households randomly interviewed, there are 94 respondents who don't have PLN connecting grid and don't have SEHEN, but ever heard of SEHEN. When those 94 respondents were asked about their interest to own SEHEN; it reveals that mostly of them are interested to use SEHEN (89% of the total 94 respondents), but most of them (85%) don't have money to apply for SEHEN; since to own SEHEN, customers are required to pay in advance for

the next 6 months of SEHEN usage (see table 7.4b).

The other 6% of the total 84 respondents who are interested to use SEHEN, actually already sent application and pay down payment, but up to the time the survey was conducted, the SEHEN was not yet installed in their houses. Meanwhile the other 2% of them already sent application, but not yet approved; and the other 4% respondents said that distribution of SEHEN in their village is very limited; and there is no more allocation of SEHEN for them. Next, 2% respondents said that that they were never informed by local authority about the possibility for them to apply for SEHEN.

Thus, main barrier to use SEHEN is the current system, in which customers are obliged to pay in advance for using SEHEN for the next 6 months; and this is also the reason for most of those who feel doubtful or not interested to use SEHEN (10% of the total 94 respondent).

Table 7.4a. Interest to own SEHEN

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base :	94	7*	38	11*	38
Yes, interested	89%	100%	79%	91%	97%
Not sure	5%		11%		3%
Not interested	5%		11%	9%	

*) The base is too small to read the data

Table 7.4b. Reasons not to use SEHEN though interested to own it

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : those who are interested to have SEHEN	84	7	30	10	37
Have no money, because it has to be paid for the next 6 months in advance	86%	57%	90%	50%	97%
Not yet realized, though already paid down payment	6%	29%	3%	20%	0%
There are only few units of Sehen for the village	4%	0%	3%	20%	0%
Because I already use solar panel (SHS)	2%		7%		
Already filed request, but not approved yet	2%	0%	3%		3%
Because there is no information from village apparatus	2%	14%		10%	

7.5. Payment system for SEHEN

In the 2nd survey, there are 151 respondents who use SEHEN –consisting of 90 respondents from the random sampling selection, and 61 respondents from the booster sampling selection (non random sampling).

When those 151 respondents were asked about how they paid for using SEHEN, it reveals that 52% of them paid monthly installments for certain periods, 40% paid fully in cash at front – for using SEHEN for 6 month, and 8% of them got it in free (see table 7.5)

Those who had to pay fully in a cash at front are found most in West Sumba (67%).

Table 7.5. Payment system

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : SEHEN users	151	21	46	11	73
Paid monthly installments for certain periods	52%	29%	76%	55%	44%
Paid fully in cash at front	40%	67%	22%	45%	42%
Got it in free	8%	5%	2%		14%

7.6. Value for money rating of SEHEN

Majority (60%) of 139 households who have SEHEN with paid believe that SEHEN has good value for money (it's worth with the benefit). Meanwhile the other respondents believe that SEHEN is not or less good value for money, or that the price is too or quite expensive compared to the benefits it can provide. This less enthusiasm generally is stated by those who use SEHEN by paying fully in cash at front for 6-month usage.

Table 7.6a. Value for money rating of SEHEN

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : those who pay	139	20	45	11	63
It is too expensive compared to the benefits it can provide	10%	10%	20%		5%
It is quite expensive compared to the benefits it can provide	29%	10%	44%	27%	25%
It is worth with the benefits	60%	80%	36%	73%	70%

Although it is only 60% who said that the amount of money they have to paid for SEHEN is worth with its benefit, but most of them (81%) said that they will keep using SEHEN for the next 6 months. Enthusiasm to keep using SEHEN within the next 6 months is mostly found in Southwest Sumba (94%), and least found in East Sumba (64%).

	Table 7.6b.	Intention to use	SEHEN for the	next 6 months
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	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : those who pay	139	20	45	11	63
Yes, I will keep using it	81%	80%	64%	73%	94%
Not sure	14%	20%	22%	9%	6%
No, I won't use it any more	6%	0%	13%	18%	0%

7.7. When SEHEN equipment (not the lamps) is out of order, do you know what you must do about it?

Among 151 households who own SEHEN in the 2nd survey, most of them (64%) know what they must do if their SEHEN is broken. They said that if their SEHEN is broken, they will report back it to PLN (90%), bring it to the technician (7%), buy replacement component (1%), report it to the village head (1%), and ask suggestion from BPD (Badan Permusyawaratan Desa or Village Legislative Body). Meanwhile the other 34% SEHEN users do not know what they must do if their SEHEN is broken.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : SEHEN users	151	21	46	11	73
Yes	66%	48%	74%	64%	66%
No	34%	52%	26%	36%	34%
Base : Those who say Yes	99	10	34	7	48
Report it back to PLN officer	90%	90%	94%	100%	85%
Bring it to the technician	7%	0%	6%	0%	10%
Buy a replacement	1%	10%	0%	0%	0%
Report it to the village head	1%	0%	0%	0%	2%
Ask suggestion from BPD	1%	0%	0%	0%	2%

Table 7.7a. Do you know what you must do if SEHEN equipment is out of order?

During the use of SEHEN, most of the users (77%) have never faced any problem at all. Meanwhile the other 33% have faced problems when they use SEHEN. Details of the problems are shown in chart 7.7b

Base : SEHEN users (n=151)



7.8. Ownership on household electric appliances

The following data of ownership of household electric appliances is only data obtained from the random sampling survey (580 respondents).

Because 40% of the total sample households do not have electricity source for powering their houses, so it is understandable that 51% of households in Sumba Island do not have electric equipment at all. The figures, however, show that there are 11% households don't have any electrical appliances in their house although they actually have electricity sources. Those who don't have any household electric appliance are found most in West Sumba district (75% of the total 88 sample households). It is quite understood because 65% households in the district do not have any electricity sources at all. In East Sumba, in fact, although percentage of households not have any electric appliance at all. A lot of percentage households who do not have any electric appliance at all. A lot of percentage households who do not have any electric appliance at all. A lot of percentage households who do not have any electric appliance at all. A lot of percentage households who do not have any electric appliance at all. A lot of percentage households who do not have any electric appliance at all. A lot of percentage households who do not have any electric appliance at all. A lot of percentage households who do not have any electric appliance at all. A lot of percentage households who do not have any electric appliance at all.

Types of household electric appliances owned by every electrified household is also very limited; **and none of the households use it for productive work**. Nevertheless, the survey found that almost all of the electrified households own cellular phone (47%); despite a fact that their electricity supply is limited, either for time of usage or the volume (only 25% households own electricity connection from

PLN). For this reason, it is quite common for people in Sumba Island to come to cell phone counters and pay some money for recharging their cell phone's battery.

Interest to own cellular phone among people of Sumba Island is indeed very high, particularly among teenagers. From qualitative survey, it shows that ownership of cellular phone is considered as representation of modern lifestyle.

Next to the cellular/mobile phone, other electronic appliance mostly owned by the households is television. Percentage of ownership of television, however, is only 14% from the total 580 sample households --with the highest ownership is in East Sumba (23% of total 194 households). Generally, to be able to watch television programs, the households have to use satellite receiver; that's why that ownership of satellite receiver in the island reaches 11%, and it is mostly found also in East Sumba (20%). Due to the limited number of households with television, so it is something common in Sumba Island the one television is watched collectively not only by the owner's family but also by their neighbors.

Ownership of electric household appliance	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
	580	88	194	54	244
Mobile phone	47%	25%	56%	61%	46%
TV	14%	8%	23%	7%	11%
Iron	12%	9%	20%	9%	7%
Satellite receiver	11%	8%	20%	2%	6%
CD/VCD/LC	7%	3%	15%	4%	4%
Fan	5%		10%		4%
Refrigerator	4%		10%	2%	2%
Magic Jar/Com	4%	5%	8%	2%	2%
Rice cooker	3%	3%	3%		4%
Blender	3%		7%		2%
Mixer	3%	1%	7%		1%
Computer	3%	1%	5%	2%	2%
Radio	2%		6%		1%
Printer	2%		4%	2%	1%
Washing machine	1%		3%		0%
Water heater	1%		1%		1%
Air conditioner	0%		1%		
Electric kettle	0%				0%
Electric stove	0%				0%
None	51%	75%	39%	39%	54%
Has none electricity source ³⁹	40%	65%	23%	30%	47%

Table 7.8. Ownership on household electric appliances

³⁹ Here, non electricity sources are not only electricity sources from PLN

7.9. The Use of lamps for lighting purposes

For the lighting purposes, people in Sumba Island generally use traditional tin lamps (51%), which generally are kerosene fueled. This particularly is in West Sumba (65%) where 65% of households are not yet covered by electricity at all; so, for their daily lighting purposes, they use kerosene tint lamps. On average, each household in Sumba Island owns 3 (three) tint lamps.

This survey reveals that the current source of electricity cannot fully meet the need of electricity for lightings. So, those who have access to any source of electricity (connecting grid or non connecting grid like SEHEN and diesel generator) will keep using kerosene tint lamps for their lighting purposes. For example in East Sumba, although percentage of those who don't have access to electricity (any source) is only 23%, but about half of the total household respondents in the district (46%) still use kerosene-fueled traditional tin lamps for their lightings purpose. Similarly in Center Sumba District; where percentage of those who don't have access to electricity (any source) is only 30%, but the use of traditional tin lamps is still high, namely 50%.

Among those who have access to any source of electricity energy, 70% of them use energy saver lamps. The lowest usage ratio of energy saver lamp among those who have access to electricity is found in Center Sumba (42%), and then in Southwest Sumba (67%). Meanwhile in West Sumba and East Sumba, most of respondents who have access to electricity use energy saver lamps (81% and 78%, respectively)..

On average, number of lamps used by one household in East Sumba is the highest (4.8 lamps) and also the longest (8.7 hours per day), compared with the other three districts.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : random respondent	580	88	194	54	244
Have no access to any electricity source	40%	65%	23%	30%	47%
Have access to electricity – any source	60%	35%	77%	70%	53%
Lighting source					
Traditional tin lamp	51%	65%	46%	50%	50%
Energy saver	42%	28%	60%	30%	35%
Electric bulb	20%	14%	23%	41%	16%
Neon/fluorescent tube	9%	2%	14%	13%	8%
Petromax	1%	1%	2%		
Rechargeable lamp	0%		1%		
Battery-run lamp	0%		1%		
Hurricane lantern	0%		1%		

Table 7.9. Types of Lamps use

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Usage ratio of energy saver lamps among those who have access to electricity energy	70%	81%	78%	42%	67%
Average number of electric lamp used	3.7	2.9	4.8	3.8	3.1
Average duration of lamp usage (hour/ day)	7.4	6.7	8.7	6.8	6.7

7.10. Spending for electricity

On average, the highest spending for electricity is for individual diesel generator, namely at IDR 352,750 per month. Meanwhile, the average spending for on grid connection (PLN) is IDR 58,851 per month –higher than average spending for SEHEN that reaches IDR 26,481 per month. Particularly for SEHEN, there are respondents who spent IDR.250,000 last month, because they had to pay in full for 6 months for using SEHEN.

Compared with the average monthly expenditure for using diesel generator in the village (IDR 23,950), it appears that the average expenditure for using SEHEN is not too far different.

Electricity source	Total users	Average expenditure (IDR)	Minimum (IDR)	Maximum (IDR)
PLN Electricity - connecting grid	144	58,851	9,000	400,000
Connection to a neighbor	31	21,661	0	65,000
Solar panel - SHS	31	7,312	0	41,666
Solar panel - SEHEN	183	26,418	0	250,000
Individual diesel generator	4	352,750	30,000	900,000
Diesel generator in the village	20	23,950	15,000	30,000

7.11. Willingness to pay for renting lamps

Only 10% of those who don't have PLN connecting grid or SEHEN (195 households, from the 2nd survey) are willing to pay for using rental lamps, if there is store that is renting lighting equipment with 2 lamps with rental price of IDR 9,000 per week.

Meanwhile, the optimum rental price to attract them to use rental lamps is IDR. 5,000 per week.

Chart 7.10 : willingness to pay for using rental lighting equipment with 2 lamps.





CHAPTER - VIII THE USE OF OTHER ENERGIES

8.1. The use of other energy

Almost all of sample households (98%) use firewood as source of energy. 96% households collect firewood by themselves, 2% households collects and sometime buy firewood, and 1% household buy all firewood they need from others.

Another source of energy largely used in Sumba Island is kerosene (65%), particularly in East and West Sumba (71% and 69% - respectively). West Sumba, kerosene is fully used for lightings, meanwhile in East Sumba, kerosene is not only used for lightings but also for stoves (31%). In Center Sumba and Southwest Sumba , kerosene is also largely used for lightings, and few for stoves (Center Sumba : 3%, Southwest Sumba : 5%) – *see also section 7.6a.*

Palm oil/coconut oil is also used by some households in Center Sumba (19% of total 54 households). They use it for fueling their traditional tint lamps.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
BASE	580	88	194	54	244
Firewood	98%	100%	96%	100%	99%
Collect	96%	95%	93%	100%	98%
Collect + buy	2%	5%	3%	0%	1%
Only buy	1%	0%	0%	0%	1%
Kerosene	65%	69%	71%	59%	60%
Candles	8%	10%	8%	13%	7%
Gasoline	6%	6%	5%	6%	7%
Batteries	4%		12%		1%
Palm oil/coconut oil/cooking oil	2%			19%	
Fuel / diesel oil	0%		1%		
LPG	0%		1%		

Table 8.1. The Use of other energy sources

8.2. The use of stove for cooking purposes

a. Types of stoves usually used for cooking purposes

Almost all respondents use open fire for their cooking purposes (98%); and some of them use both open fire and kerosene stoves (7%).

The highest use of kerosene stove is found in East Sumba District (18%); and there are 14% households that use kerosene stove and open fire as well for cooking.

For the LPG Stove, it is really unpopular for households in Sumba Island, only use by 1 respondent in East Sumba, due to its expensive price (i.e. : IDR 17,500 per kg)⁴⁰

Actually, open fire stoves consume lot of firewood, compared with permanent stoves - as found in Malang, East Java. Simple construction of open fire stove makes lot of the heats vanish and wasteful. This is why that although their cooking menu is very simple with the short time of usage, but their firewood consumption per day is quite high, namely 12.1 kg, on average. *(see also section 8.2d)*

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
BASE	580	88	194	54	244
Open fire	98%	100%	96%	100%	99%
Kerosene Stove	9%	5%	18%	6%	5%
Magic Jar/Com	3%	2%	6%	2%	1%
Rice cooker	3%	3%	2%		4%
LPG Stove	*%		1%		

Table. 8.2a. The use of stove for cooking purposes

b. Number of stoves owned - open fire.

Open-fire stoves used by households in Sumba Island are entirely fueled with firewood. Almost all households in West Sumba districts own 1 open fire. It is similar in Southwest Sumba, where majority (69%) of households own 1 open fire. In East Sumba district, however, majority (65%) of households own 2 or more open-fire stoves; and in Center Sumba, nearly half of households (43%) own more than 2 of open-fire stoves.

Meanwhile from the total 53 households who own kerosene stove, 51% of them own 1 stove only, 40% own 2 stoves, and 9% own more than 2 stoves. The highest usage of kerosene stove is found in East Sumba, where 62% of 34 kerosene stove users own two or more stoves.

Implicitly, the low number of total stoves owned by majority of respondents in Sumba Island reflects that majority of the households do not cook varieties of menus for their meals.

⁴⁰ Sales price of LPG in Java & Bali islands is only IDR 4,000 – 6,000 per kg.

Table. 8.2b. Number of stoves owned.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : those who has open fire stove	571	88	187	54	242
1 unit	60%	94%	35%	52%	69%
2 units	25%	6%	56%	6%	11%
More than 2	15%	0%	9%	43%	20%
Base : those who has kerosene stove	53	4	34	3	12
1 unit	51%	100%	38%	100%	58%
2 units	40%	0%	50%	0%	33%
more than 2	9%	0%	12%	0%	8%

Pic : open fire stove



c. Frequency and duration of stove usage

Almost all respondents (96%) use open fire stoves 2 - 3 times per day, with average duration of 58 minutes per one usage occasion. The shortest duration is found in East Sumba (49 minutes). Yet, it should be remembered that 65% households in East Sumba use 2 open fire stoves or more; meanwhile in the other districts, most of households (52% s/d 94%) only use 1 open fire stove.

For kerosene stove usage, 30% of 53 user households use their stoves 3 times per day, 13% use 2 times per day, and 21% only use 1 time per day; and 36% others rarely use their stoves. The average duration for every usage of kerosene stove is usually shorter than open fire (30 minutes vs. 58 minutes).

Table 8.2c.i : frequency and average duration of stove usage

	open fire	Kerosene stove	Rice cooker	Magic Jar/Com
BASE	571	53	17	18
3 times per day	51%	30%	29%	11%
2 times per day	46%	13%	18%	22%
1 time per day	3%	21%	41%	39%
2 - 3 times per week	*%	6%	6%	6%
Once a week		13%		6%
Less often than once a week		17%	6%	6%
for the whole day				11%
Avg usage per occasion (minutes)	57.7	30.2	29.7	281.7

Table 8.2.c.ii : frequency and average duration of open fire stove

Open fire usage	Total	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base :	571	88	187	54	242
3 times per day	51%	39%	52%	56%	54%
2 times per day	46%	61%	40%	41%	45%
1 time per day	3%		7%	4%	1%
2 - 3 times per week	0%				0%
Avg usage per occasion (minutes)	57.7	69.3	48.8	65.4	58.6

d. The usage of stove

Open fire is not only used for cooking meals for all family members (97%), but also for boiling drinking water (50%), and for cooking pig feeds (46%). The use of open fire for cooking pig feeds is found most in West Sumba (57%) and Southwest Sumba (67%).

From the total 571 households who use firewood, some 32% of them consume 6-10kg of firewood per day, and 33% consume 11 – 15 kg firewood per day. Thus, the average weight of firewood used for the open fire is 12.1 kg per day (*see table 8.2d.iii*). The total weight of firewood used is measured using digital scale at the day of the interview. The highest use of firewood is found in Center Sumba, with daily average use of 15.9 kg. This high use is highly influenced with the number of open-fire stoves they own, where 43% households in the district use more than 2 open-fire stoves every day.

Generally, users use the open fire for cooking one-time meal, and not for heating meals. Meanwhile, 33% of kerosene stove users use their kerosene stoves for warming, and also for cooking meals for their families (95%).

T	able	8.2	d.i	:	Stove	usage
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	open fire	kerosene stove	LPG stove	rice cooker	Magic jar/com
Base : total users	571	53	1	17	18
Cooking meals for family consumption	97%	89%	100%	88%	50%
Boiling water for drinking purpose	50%	19%			
Cooking foods for livestock	46%	4%			
Heating up water for bath	22%	6%			
Heating meals	12%	38%	100%	47%	56%
Cooking meals for selling	2%	2%			

Table 8.2 d.ii : Open fire stove usage – in four districts.

Open fire	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : total open fire users	571	88	187	54	242
Cooking meals for family consumption	97%	98%	95%	98%	99%
Boiling water for drinking purpose	50%	45%	46%	56%	53%
Cooking foods for livestock	46%	57%	16%	39%	67%
Heating up water for bath	22%	18%	17%	22%	28%
Heating meals	12%	13%	21%	9%	6%
Cooking meals for selling	2%	1%	5%		*%
Average weight of firewood used per day (kg)	12.1	12.6	8.8	15.9	13.6

Table 8.2 d.iii : The usage of firewood per day.

Weight	Total Sumba	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base :	571	88	187	54	242
<u>< </u> 5 kg	8%	1%	21%	2%	2%
6 - 10 kg	32%	33%	45%	24%	23%
11 - 15 kg	33%	33%	24%	26%	42%
16 - 20 kg	18%	26%	7%	15%	25%
21 - 30 kg	9%	7%	2%	33%	9%
Usage average per day (kg)	12.1	12.6	8.8	15.9	13.6

e. Sources of firewood for the cooking

In Sumba Island, sources of firewood are quite abundant. Here, most of households (85%) collect firewood from their own yard/garden. Yet, there are also 20% firewood users who usually collect firewood from community forest, and 12% from other people's land/farm. Almost all of the collectors said that they only cut dried branches for firewood (97%).

Percentage of those who usually collect firewood from community forest is found most in West Sumba (36%) and East Sumba (39%). In total, those who also buy firewood from others or market, are only 3%; and can only be found in East Sumba (5%), East Sumba (3%) and Southwest Sumba (less than 1%).

In general, every family collects firewood 4 times on average per week; with average length of 70 minutes for every firewood collecting. Households in Center Sumba and Southwest Sumba collect firewood almost every day (4.6 times and 5.3 times per week, respectively); more frequent compared to the household in other two districts.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : total households	573	88	187	54	244
Own yards/farm	85%	84%	75%	94%	91%
Community forest	20%	36%	39%	2%	4%
Other people's land/farm	12%	10%	18%	7%	8%
Purchase it	3%	5%	3%		2%
State forest	2%	9%	3%		*%
Company plantation	1%		1%		1%
Collected at the beach	1%		2%		
From outside the town	0%		1%		

Table 8.3 e : Source of firewood

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
How in collecting it? - most often					
Base : Those who collected by their own	568	88	187	54	239
From cutting trees	3%		5%	2%	2%
From picking up dried branches	97%	100%	95%	98%	98%
Avg frequency in collecting firewood/ week	4.0	2.4	2.8	4.6	5.3
Avg time spent per occasion for collecting firewood (minutes)	69.7	98.9	67.1	63.1	62.4

8.3. Spending for energy (other than electricity)

From the total 580 random respondents, there are only 79% of them who spend money for purchasing non-electricity sources of energy. Total spending for energy mix, outside for electricity, reaches IDR 39,521 on average **<u>per month</u>**. The highest spending for energy mix is in Southwest Sumba (IDR 48,505 per month), and the lowest one is in Center Sumba (IDR 27,864 per month).

Energy source purchased most in Sumba Island is kerosene, which is purchased by 72% households; with average spending of IDR 24,475 per month. This low spending for kerosene is because kerosene generally is only used for lightings purpose, and only 9% of total 580 respondents use kerosene for their kerosene stove (*see table 8.2a*). In fact, 18% of total 53 kerosene stove users tend to rarely use their kerosene stoves (only 2 times or lesser per week); with usage duration of only 30 minutes.

From the total 580 samples, there are 21% households who never spend any money at all for other energy categories outside electricity. It is because for their cooking purpose, they only use firewood taken from their yards or forest. For their lighting purposes, they only use coconut oil they made. Thus, they spend no money at all for cooking and lighting purposes.

		Total	West Sumba	East Sumba	Center Sumba	Southwest Sumba
BASE		580	88	194	54	244
Do not have any spending for other energy source		21%	25%	19%	19%	23%
Kerosene	% household use	65%	69%	71%	59%	60%
	Avg spending (IDR)	21,475	19,631	24,042	12,500	21,805
LPG	% household use	0%	0%	1%	0%	0%
	Avg spending (IDR)	210,000		210,000		

Table	84	Ь·	the	usade	and	spendina	for	other	enerav	source
rabic	0.7	ν.	uic	usuyu	ana	Spending	101	00101	Chicigy	300100

		Total	West Sumba	East Sumba	Center Sumba	Southwest Sumba
0 "	% household use	8%	10%	8%	13%	7%
Candles	Avg spending (IDR)	8,667	7,167	8,100	4,357	11,735
Purchased firewood	% household use	2%	3%	3%		2%
	Avg spending (IDR)	85,000	31,667	86,667		122,500
Batteries (for lamp/ flashlight)	% household use	4%		12%		1%
	Avg spending (IDR)	24,319		24,888		17,500
Total energy mix	% household use	79%	75%	81%	81%	77%
	Avg spending (IDR)	39,521	32,189	35,140	27,864	48,505

CHAPTER - IX

ACCESS TO CREDIT, INFORMATION AND MARKET/STORE

9.1. Access to credit

For the total, most of the households sample (58%) said they never took credit from any party **within the past 1 year**. Those who did not have any credit within past 1 year is found more in Center Sumba (83%), and East Sumba (75%).

Main sources of credit are relatives or friends (20%), *rentenir* (loan shark – 6%), cooperative (5%), bank (5%) and PNPM⁴¹ (3%). The loan shark plays important role as the source of credit for households in Southwest Sumba (9%) and West Sumba (4%).

Bank, as the source of credit, is mostly used by households in East Sumba (8%). This is also similar for PNPM program (8%), as the source of credit.

Table 8.1 : Sourc	e of credit within	past 1	vear

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwe st Sumba
Base : Total households	580	88	194	54	244
Relative or friend	20%	7%	20%	7%	28%
Rentenir (loan shark)	6%	6%	4%		9%
Cooperative	5%	6%	5%	4%	5%
Bank	5%	1%	8%	4%	4%
PNPM	3%		8%		0%
Multifinance company (e.g.: credit for motorcycle)	1%	1%	3%	2%	0%
Arisan (Savings and Loans arisan)	1%				2%
LSM Pidra	1%		2%		
Mortgage house/pawnshop	1%		1%		0%
Others (Shop, landlord, pegadaian, micro credit institution, Yayasan)	2%	3%	2%	0%	2%
None	58%	77%	53%	83%	51%

⁴¹ PNPM = Program Nasional Pemberdayaan Masyarakat (National Program for Community Empowerment)

JRI Research - Socio-Economic-Gender Baseline Survey, 2012

9.2. Awareness & attitudes towards several energy sources

a. Awareness

In this survey, the awareness level does not include awareness content (knowledge). Here, the awareness is only awareness toward the terms: Biogas, SEHEN, and Biofuel as sources of alternative energies. Therefore, it is possible if a respondent said he/she ever heard/known about Biogas, SEHEN and Biofuel, but his/her understanding about these three is incorrect.

Awareness toward SEHEN among 580 random respondents is 47%; with highest awareness is found in Center Sumba District (85%) and the lowest awareness is in West and East Sumba (32% and 35% respectively); meanwhile awareness toward Biofuel, is still very low, namely only 4%. Among 580 random respondents, there are 18% respondents who are ever heard about Biogas, although generally they don't know what Biogas energy is exactly. The highest awareness toward Biogas is found in East Sumba (23%), and the lowest awareness is found in West Sumba (3%). This high awareness level toward Biogas in East Sumba (23%) is understandable, because currently BIRU gives attention to build more construction of Biogas in East Sumba; and the Husbandry Office of East Sumba also pays bigger attention to the development of biogas than other husbandry offices in other districts do.

	TOTAL	West Sumba	East Sumba	Center Sumba	Southwest Sumba
Base : total households	580	88	194	54	244
SEHEN (Super Eksta Hemat Energi)	47%	32%	35%	85%	55%
Biogas	18%	3%	23%	11%	20%
Biofuel	4%		5%	6%	6%

Table 9.2a .Awareness toward several renewable energy source

b. Source of awareness

Main source of awareness toward the three alternative energy sources are word by mouth from friend or relatives (i.e. Biogas : 50%, SEHEN : 49% and Biofuel : 58%).

Specifically for SEHEN (*Super Eksta Hemat Energi*), other most important sources of information are local government apparatus, such as village leader, head of RW/RT (47%). Local government apparatus are also other source of information for Biogas (19%). Mass media (e.g. TV, radio, etc) also plays important role in Biogas socialization (10%). Meanwhile for biofuel, the other most important source of information are officers from local government institution, such as from regional office of plantation or *Dinas perkebunan* and regional office of energy or *dinas energy* (15%), and mass media (12%).

	Biogas	SEHEN	Biofuel
Base : those who are aware	103	275	26
Friend/relative	50%	49%	58%
Local government apparatus (Village Head, Ketua RW/RT)	19%	47%	8%
Media (TV, radio, etc)	10%	0%	12%
Hivos/ BIRU officer	7%	1%	
Officer from local government institution (Plantation, Energy)	7%	6%	15%
Other source	6%	3%	8%
Don't know /forget	1%	5%	8%

Table 9.2b .Source of awareness toward several renewable energy source

9.3. Existence of business units surrounding the villages

From 34 villages selected randomly for the 2nd survey (for interviewing 268 respondents), it reveals that only 18% of the total 34 villages own market (traditional/wet market), which open at least once a week. Meanwhile, 79% of the total 34 villages have *warongs* (small stores), and only 12% own shops; the other 21% of the 34 villages don't have any *warong* or shop at all.



Base : total village (n=34)



From 27 villages that own *warong*/shop; 96% of them own at least 1 *warong*/shop that sells daily basic needs. And only 15% villages that own at least 1 *warong*/shop that sells electronic goods, household equipments, agriculture results or materials/tools for farming; and only 11% villages that own at least 1 *warong*/store that sells power tools.

Meanwhile, regarding ownership of the *warong*/shop, it reveals that 96% of *warong*/shop inside the 27 villages that own *warong*/shop are owned by common people, local residents; meanwhile the other 4% are owned by non native people.

Chart 9.3b. Goods/commodities traded in warong/ stores (M).

Base : Total villages having warong/shop (n=27)



Chart 9.3c. Owners of warong/stores (M)

Base : Total villages having warong/shop (n=27)



Attachement 1 : ToR

Iconic Island Initiative

Terms of Reference

Socio-economic and gender baseline study for the Iconic Island 30 January 2012

1 Introduction and background

Hivos has started an initiative to develop a show case for a 100% renewable energy island in Indonesia, called 'Iconic Island'. The aim of the initiative would be to completely end the dependence on fossil fuels of this island, and to demonstrate and communicate the possibility thereof in the Netherlands as well as in Indonesia. It should on one hand provide energy to the islands population, and on the other hand also attract interest, cooperation and funding from institutions, companies and the public inside and outside Indonesia for replication.

After a scoping process, Hivos has selected the island of Sumba in Nusa Tenggara Timur province as target for this endeavor. A number of studies have been undertaken to look into the options for energy development on the island, stakeholder meetings have been undertaken and in March 2011 an agreement was signed with the four Bupati's of the Sumba districts, the governor and PLN. A limited number of actual energy activities have already started by Hivos, but the major role of Hivos is to mobilize resources, facilitate partnerships and assist the provincial government in taking strategic decisions on which energy strategies to take.

In the end, the project which is expected to take around 10 years to reach its goals, the focus on renewable energy in Sumba, should support the enhanced welfare of the ca. 650,000 island inhabitants, the vast majority of which currently live at low social and economic standards.

2 Objective of the Iconic Island initiative

The objective of the Iconic Island initiative is to end the dependence on fossil fuels and to demonstrate and communicate the possibility thereof.

The following results are envisaged by the Iconic Island initiative:

- 7. All existing energy sources have been replaced by renewable sources (transport sector tbd)
- 8. New renewable energy sources have been developed (including biogas, (micro-)hydro, wind energy)
- 9. The access to energy (off grid) and the electricification rate (grid connection) has increased
- 10. New productive activities have been initiated as a result of energy access and contribute to a more vibrant local economy
- 11. The socio-economic position of women has considerably improved as a result of access to renewable energy
- 12. Local authorities, private sector parties and community based organisations have established formal collaborations with (local and foreign) investors in the field of renewable energy.

3 The need for a socio-economic and gender baseline

Having this welfare improvement and poverty alleviation goal as an important overall goal of the Iconic Island initiative, it is of great importance to be able to measure the socio-economic benefits the initiative has for the local population. Hivos considers it important to apply a gender-sensitive approach to welfare measuring. Hivos needs to be able to measure the socio-economic impact of the programme in both quantitative and qualitative ways. To be able to assess these results in the future, baseline data needs to be collected. This ToR is meant to explain the objectives, research questions, methodologies, and expected outcomes for a socio-economic and gender baseline study for the Iconic Island Initiative focusing on results 4 and 5 of the Iconic Island Initiative. This

study sets the baseline for evaluating the outcomes and impacts of the programme. The study should result in a good overview of the current (gender specific) socio-economic situation. It is envisaged that the data collection will be repeated for a mid-term and end-term evaluation. Hivos will provide regular updates on the progress made, and this baseline will be very useful as reference for measurement.

4 Objectives of the study

The baseline study shall serve to:

- a. establish a reliable database on socio-economic and gender aspects in the Iconic Island target districts in Indonesia;
- b. serve as a basis for monitoring and evaluation of programme activities;
- c. enrich monitoring and evaluation through development of participatory indicators;
- d. provide benchmark data for future internal or external assessments of the Iconic Island initiative at a point in time that remains to be defined.

5 Scope of work

5a Deskwork

The consultant is expected to undertake two major deskwork tasks:

- 1. Review maps, reports, tabular data and existing literature on Sumba and summarize the key information relevant for the Iconic Island initiative;
- 2. Work with GIS (Geographic Information System) specialist to develop maps which represent the socioeconomic data, making use of PODES and SUSENAS data (made available by Hivos), map-data (available in Hivos) and other relevant data;
- 3. Use the data as input for the combined review/survey report, making use of tables and maps.

5b Questionnaire and survey

The Consultant will develop a questionnaire and undertake a survey. The survey questions are guided by the assumption that application of Renewable Energy will lead to positive changes in the spheres of energy supply, agriculture, health, sanitation, gender relations, environment, and living conditions of rural households, in particular for women and children. Based on this assumption the Consultant will define expected results on outcome and impact level.

5c Development of Indicators

For all these expected results, SMART⁴² indicators will be developed to collect relevant baseline data, which will serve as basis for impact monitoring. Therefore, based on the deskwork, the Consultant will define clear indicators which can be used for future performance, impact and outcome monitoring objectives 4 and 5 of the lconic Island Initiative. The following aspects may be part of these indicators: Household characteristics, time allocation (gender/age specific), use of energy mix, sanitation and hygiene practices, access to credit or development support, income and employment, position of women and division of labor, access to knowledge and information, inclusiveness, vulnerable groups.

5d Survey

The Consultant will prepare the survey activities while doing the deskwork. These activities include:

- 1. Preparing questionnaire (to be approved by Hivos);
- 2. Organize the field visit;

⁴² S=Specific, M=Measurable, A=Achievable, R=Relevant, T=Time-bound

- 3. Work with Sumba based Hivos staff to engage local students as enumerators (ca. 16 persons and 4 back ups);
- 4. Prepare enumerator training and field test.

In Sumba the work will have to start with selection of and an introduction and briefing session with the enumerators, followed by a field test. The survey work is then organized and teams of 2 persons will go to the four districts to undertake the interviews (two teams of two persons in each district, each team will do 40 interviews during 5 days, with a possible extension if required). Consultant will have daily meetings with selected interview staff to check results. Consultant will bring all questionnaires back at return to start immediate data processing. Changes in this approach will need approval from Hivos.

5e Analysis and reporting

After data entry, the data will be debugged and properly put in a database (using SPSS, MS Excel or MS Access). Reporting format will be designed and data results will be analyzed and results will be presented in comprehensive graphs and tables. A draft report will be presented at the latest 20 days after the end of the field survey. Hivos will need a week to give comments and give feedback, after which the Consultant will have one week time to present the final report.

6 Methodology

a. The baseline study will start with a desk study using existing reports and publications from different sources including Iconic Island documents, Sumba literature and PODES and other socio-economic data for the 4 districts.

b. The baseline study will collect data from a representative sample group (appr. $4 \times 80 = 320$ respondents in the four Sumba districts, providing 5% statistical significance and confidence interval 5.47). The location (regions) where the study is to be done should be selected in cooperation with Hivos. Changes in this approach will require approval from Hivos.

c. The methodology for data collection should be a combination of quantitative, qualitative and participatory approaches. It is proposed to make use of different techniques including Focused Group Discussions with different groups, interviews, direct observation, and participatory research.

d. The approach should be gender sensitive and data should be disaggregated for gender. Women and men are to be interviewed separately.

e. The study should be replicable by others at any time during programme implementation, all methods used for data collection and analysis, need to be explained and justified in the report.

f. If required data is already available from other sources or earlier studies, this will be used.

g. Where possible, the consultant will involve Hivos and other stakeholders (national and/or local government, university) in the study.

h. Any questionnaires made for this assignment have to be approved by Hivos before use (Hivos will need 2 days for approval).

7 Expected output

The report on the socio-economic and gender baseline study for the Iconic Island shall be well-structured and clearly written in English and have a maximum of 35 pages, excluding the annexes.

The report should contain:

- Executive summary
- Collection and analysis of latest available PODES data (as provided by Hivos), useful for future genderspecific monitoring (indicating current incomes/wealth levels, land use, sources of income, school

enrollment, health aspects and other relevant socio-economic and gender data) presented by village, sub-district, district and Sumba as a whole

- Household survey results (based on significant number of samples, significance level 95%)
- Schematic presentation of relevant data (use of charts, graphics etc)
- Analysis of relevant data in a clear and readable manner
- Final list of relevant indicators which can be used to measure expected results
- Description of selection of sample group and location
- Explanation of methodology
- Cleaned raw data available in digital Excel spreadsheets on CD

The final report will be available in hard copy (5 copies) and in electronic form. The report will be made available to the PO Iconic Island of Hivos ROSEA. The report will be submitted in draft version before 1 April 2012. Hivos will have 2 weeks to submit their comments in writing. The final version is to be submitted 1 week after reception of these comments.

8 Time schedule

The study is expected to start before 15 March 2012, more detailed timeframe to be defined based on discussion between consultant and Hivos PO.

Proposed timing:

- Desk study (4 days)
- Develop methodology and tools and preparations of the field work (3 days)
- Field work / data collection, including training of enumerators (10 days)
- Travel (2 days)
- Data analysis (5 days)
- Report writing (5 days)

Total: 29 working days. The study (desk study, field mission and reporting) shall be completed before 15 March 2012 (Sunday not considered working day).

9 Composition of the team

The team should consist of an experienced socio-economist and at least two experienced interviewers that have expertise in field work. The team leader is responsible for developing data collection tools, data analysis and writing report. The team should be composed of at least one woman and one man. The team should have sufficient knowledge of local languages and culture. The team should have sufficient knowledge of gender and socio economic issues, and methodologies for sampling and data collection. Inclusion of students or junior researchers is stimulated as part of more structural cooperation with universities.

10 Budget

The study is to be financed from the Iconic Island 2012 budget.

Additional info to be obtained for second survey :

- $\circ \quad \ \ {\rm Reason \ why \ they \ do \ not \ have \ electricity \ yet}$
- \circ $\;$ Do they aware of Sehen, if yes, what is their constraint for not having it
- o Would they interested on rental light equipment
 - If yes, how much would they afford to pay for the rental (Hivos will provide range of options to select)
- o Are there any small kiosk available around the survey area
 - If yes, what are they selling and who owned the kiosk (civil servant/retiree/head of village etc)
- o Is the Sehen perform as user expected
- Do users are well inform on what to do if the unit is broken or what do they do when the unit is broken
- Do user got the unit for free or paying from their own money
- o Do the monthly installment or pre-paid payment through bank account is affordable
- o Do they still want to continue using Sehen after 6 month/1 year
- What are the difficulties that user felt from Sehen

Attachement 2 : Questionnaire

JRI Research - Socio-Economic-Gender Baseline Survey, 2012
Q'naire No		,	Job No	
NAME OF RESPONDENT:	NAME OF INTERVIEV	WER :		
Address :	Date of Interview	:		
	Time starts	:	to	
Kecamatan :	Duration of intv'w	:		Minutes
Desa/ Kelurahan:				

INTRODUCTION: Good morning/afternoon/evening. My name _____, I'm an interviewer from JRI Research. We are now conducting a polling survey about socio-economic aspects of Sumba people. Result from this survey will serve as inputs/recommendations for the implementation of renewable energy program in Sumba Island.

In order to make the result of this survey as useful as possible to the local population, we need to get the truthful and accurate information from the right person in this household. Since this household was selected as the representative of the user community within this hamlet, so please give your time to be interviewed. All information provided by you will be handled fully confidentially.

CHARACTERISTICS OF HOUSEHOLD

	1.	The walls of the main building consist of		2	2. The main roofing material is		3.	The is	The main flooring material is	
		1	Bamboo		1	Palm fibers		1	Earth	
		2	Wood		2	Palm leaves		2	Bamboo	
		3	Stones		3	Wood		3	Wood	
		4	Cement-made bricks		4	Asbestos		4	Concrete	
		5 6	Clay-made bricks Other		5 6	Zinc plate Concrete		5 6	Bricks Stones	
					7	Ceramic/clay made roof		7	Ceramics	
					8	Reeds		8	Other	
					9	Other				
4.	Are t	he wind	dows fitted with glass?	1. Yes, a	11	2. Yes, some 3. Not				

HOUSEHOLD PROFILE

5. Interviewer: ask their neighbors to identify status of this family/ head of this household within Sumba's community?

- 1. Maramba (noble class)

QUALITY CONTROL	NAME	DATE	SIGNATURE	REMARK
INTERVIEWER				
SUPV. CHECK				
RECALL/VERIFY				
CODER				

HOUSEHOLD PROFILE

6. Is there anyone from this family who becomes village apparatus or neighborhood committee (*pengurus lingkungan*)?
 1. Yes; as: ______

2.

100,	uo.	_
No		

7.		8.	9.	10.		10.		11.	12.	13.
Who [OLDER THAN 5 YEARS] lives in the		Sex	Age	Education		First Occupa-	Second	If Q.11/12 is not #1		
does he/ she have to the head of	household?			1.	2.	tion	tion	How much does		
				Level of education	Number of years			he/ she earn per month?		
				code	[WITHOUT RE-					
Name (a)	Code (b)	m/f	years		PETITIONS]	<u>code</u>	<u>code</u>	<u>IDR</u>		
1.										
2.										
3.										
4.										
5.										
6.										
7.										
8.										
9.										
							TOTAL			

14. [WHO IS THE INTERVIEWEE?]		CODE of Q.7 b	CODE of Q.11 and 112
		1. head of household	
15. Who cooks in the household? [MULTIPLE ANSWERS POSSIBLE]	Number of Q.7a	 2. spouse 3. father/ mother 4. brother/ sister 5. son/ daughter 6. grandchild 7. other relative 8. septiant 	 farmer/cultivating land , breeder/livestock farmer(independent) civil servant [SPECIFY] civil servant, retired other occupation, independent
	Number of Q.7a	9. other non-relative	5. other occupation, dependent [SPECIFY] 6. unpaid family worker
16. How many children younger than 6 years live in the household?		CODE of Q.10.1 0. none 1. primary school	 7. pupil, student 8. household, other retired 9. unemployed
		2. junior high school	
		4. vocational training 5. university	
17. [TOTAL NUMBER OF PERSONS IN HOUSEHOLD]			

Agriculture :

18. Do you(read status one by one)?

19. For every answer circled in Q.20, ASK: what is the size of land you cultivates? (specifically for code 1 : also ask, what is the size of the non-cultivated land)

Statua	P. 18	P.19		
Status	(M)	Cultivated	Non cultivated	
Do farming, on your own lands.	1	ha/ m2 *)	ha / m2 *)	
Do farming on leased lands.	2	ha/ m2 *)		
Do farming on other person's land - through profit-	3	ha/ m2 *)		
sharing system	5			
Do farming for particular Maramba's land	4	ha/ m2 *)		
Do farming on village land (Tanah Adat)	5	ha/ m2 *)		
Do farming on the state land (Tanah Negara)	6	ha/ m2 *)		
Not do farming at all	9	→ Go to P.		

20. Please indicate the crops or plants that you cultivate or plant in your farming land and/or your house yard!

21. Which products (of Q.20) did you sell in a non-transformed way during the last 12 months?

22. How much money did you make selling that non transformed of......(Product indicated in Q.23) during the last 12 months?

23. Which products (of Q.20) did you sell in a transformed way during the last 12 months?

24. How much money did you make selling that transformed of......(Product indicated in Q.25) during the last 12 months?

P. 20		Non transformed		Transformed		
		P.21	P.22 (IDR)	P.23	P.24 (IDR)	
Cashew	1	1		1		
Candlenut (Kemiri)	2	2		2		
Cassava	3	3		3		
Castor (Jarak kepyar)	4	4		4		
Сосоа	5	5		5		
Coffee	6	6		6		
Corn/maize	7	7		7		
Cotton (Kapas)	8	8		8		
Cotton (Kapas)	9	9		9		
Elephant grass	10	10		10		
Horse radish (Kelor)	11	11		11		
Jatropha Curcas (Jarak pagar)	12	12		12		
Jatropha gossipifolia (Jarak merah)	13	13		13		
Kapok	14	14		14		
Kusum (Kesambi)	15	15		15		
Nypa (Nipah)	16	16		16		
Palmyra palm (Lontar)	17	17		17		
Patchouli (Nilam)	18	18		18		
Peanuts	19	19		19		
Pineapple	20	20		20		
Potato	21	21		21		
Rice	22	22		22		
Sorghum	23	23		23		
Sugar Palm	24	24		24		
Sugar tree	25	25		25		
Vegetables (any)	26	26		26		
Fruits (any)	27	27		27		
Other, specify:	28	28		28		
None of them		99		99		
TOTAI	L					

TOTAL EARNING PER YEAR selling all agricultural products : IDR ____

Agricultural inputs.

25. How much do you roughly spend per year of the following agricultural expenditures ?

Seeds / seedlings	1	IDR
Organic fertilizers (manure, compost)	2	
Chemical fertilizer (such as: Urea, ZA, TS, etc)	3	
Pesticides / anti-pest	4	
The paid labor	5	
Renting tractor	6	
Other, specify:	7	
TOTAL		

Livestock :

26. Which animals do this family currently have ? For each animals they have, ask Q.29 up to Q.

27. How many of (mentioned) do this family keep/raise?

28. How many of it do this household own?

29. Filled by enumerator : number of animal owned by others (deduct the number of animal in Q.27 - Q.28).

30. For animal owned by others (Q.29), ask: what remuneration you get from taking care of the other person's animals?

31. Within the last 12 months how many of ..(mentioned) used for traditional ceremony or other events?

P. 26		P.27	P.28	P.29	P.30 (related with Q.29)	Q.31
F. 20		Keep/raise	household's own	(own by other – filled by enumerator)	 Doesn't get any remuneration at all, because the animal are belonged to Maramba Doesn't get any remuneration at all, because the animal are belonged to my relatives Get fixed payment fee every week/month. profit share Other, specify: 	Used for traditional ceremony or other events
Pig	1					
Goat / sheep	2					
Horse	3					
Cow	4					
Buffalo	5					
Poultry	6					
Other, please specify	7					
	8					
	9					

Note : if circled code 4 (profit share) in one of answers on Q.30, ask: the profit-sharing system usually applied!

32. During the last 12 months, did you earn money from the livestock? (from selling animals, selling their eggs or renting it for farming) 1. Yes; How much money did you get from your livestock during the last 12 months?: IDR_

2. No

Q33 to 35. Only for the animals owned

- **33.** Where do you keep these animals...., Do you keep these animal in stable (zero grazing) all day?, stabled only at night? Not stabled at all or freely grazing (S)
- **34.** What do you do with the dung? (M)
- 35. (IF Stabling in Q.33 code 1 or 2): How far the stable is from your dwelling place? (If attached to the house, indicate as '0')

P. 28		P.33	P.33	P.35 (meter)
		1. Stabled (zero grazing)	1. Do nothing/ leave where it is	
		Stabling only at night	2. dump into open drain	
		3. Not stabled at all or freely grazing	 dump into lake / river/irrigation system Dump into forest 	
			5. use as fertilizer	
			6. use for biodigester	
			7. sell	
			8. give away for free	
			9. bury in soil	
	1		10. other – what?	
Pig	1			
Goat / sheep	2			
Horse	3			
Cow	4			
Buffalo	5			
Poultry	6			
Other, please specify	7			
	8			

If not stabled \rightarrow automatically, file code 1 in column for animal dung (Q.34)

36. (If there is animal not stabling in Q. 33), ASK: If someone ask you to stable(mention), would you do it? 1. Yes 2. Doubtful 3. No

Livestock inputs.

37. How much do you roughly spend per year of the following livestock expenditures ?

Feedstuff for the livestock	1	Per month (IDR)	Per year (IDR)
Water for the livestock	2		
Antibiotics for the livestock	3		
Salary for the paid workers	4		
Services for cattle studding service	5		
Other :	6		
TOTAL			

38. What is the household expenditure for the specific item (ask one by one) per month/year? -if no expense, write 0 on the column total.

Household Expenditure (Multiple Answer Possible) (Q.38a)		Total /month (Q.38b) <i>IDR</i>	Total /year (Q.38b) <i>IDR</i>	remark
Food	1			
Telecommunication	2			
Water	3			
Transportation (public, private vehicle)	4			
Cigarettes	5			
Clothes	6			
Medical Expenses	7			
Schooling Expenses for Children	8			
Crop Transformation (relating to Q23)	9			
Traditional Ceremonies	10			
Daily battle nut (sirih pinang)	11			
Other				

39. How much remittance received by this family from family members working out of this province within the past 12 months? IDR. _____

Source of water.

40. Which water sources does your household use for :

a. household purposes (cooking, washing, bathing, etc) b. Livestock purpose

Source of Water	P. 40 a. household (M)	P. 40b. Livestock (M)
Community tap	1	1
PAM (water piping company)	2	2
Wells	3	3
Hand Pump	4	4
Electric pump	5	5
River, lake	6	6
Rain water	7	7
Purchase it	8	8
Other, specify		

41. Do you fetch the water from outside your home for: Household purpose? Livestock purpose?

42. If 'Yes': How far do you take to fetch the water? (if attached to the house, write 0)

	P.41		P.42
	Yes	No	
a. Household purpose (for cooking, washing, bathing, etc)	1	2	meter
b. Livestock purpose	1	2	meter

2. No → to Q.46

- 44. Cumulatively in the past 1 year, how long did you have to face the difficulty in finding water? _____ week/month (choose the appropriate one)
- **45.** When you faced the difficulty in finding water, what did you take to cope with your needs for water for Household purpose? Livestock purpose?

How you cope with the need for water	a. household purpose (M)	Livestock purpose (M)
Do nothing	1	1
Purchase it	2	2
Finding water from other place farther	3	3
Asking water to neighbor/relatives	4	4
Grazing the animal to farther places	5	5
Other, specify		

ENERGY SOURCES / ACCESS

- 46. Which of the following electricity sources do you have in your household?
- 47. And which one do you use within the last one month?

For source of energy owned in Q P.46 but is not used in Q.47, Ask the reason:

- **48.** Why do you not use(Read), although you own it?
 - 1. It is damaged, unusable
 - 2. The fuel price is expensive.
 - 3. The monthly contribution fee is expensive.
 - 4. Other, please specify:

	P.46	P.47	P. 48. Reason :
PLN Electricity – connecting grid	1	1	1. 2. 3. 4
Connection to a neighbor	2	2	1. 2. 3. 4
Solar panel – SHS	3	3	1. 2. 3. 4
Solar panel – SEHEN	4	4	1. 2. 3. 4
Car battery (without solar panel)	5	5	1. 2. 3. 4
Individual genset	6	6	1. 2. 3. 4
Genset in the village	7	7	1. 2. 3. 4
Other	8	8	1. 2. 3. 4
No Access	10	Go to Q	52

Ask Q. 48& 50, for each energy use in the past 1 month (transfer answers from Q.48)

- **49.** How much do you spend for that energy last month? (i.e. for charging battery if using car battery, for purchase fuel if using genset; for monthly fee for PLN electricity, etc)
- **50.** Are you satisfying or dissatisfying with that energy you use?
- **51.** If dissatisfying : Why?

	Transfer from Q.48	P.49 (monthly expenditure)	P.50 satisfying?	P.51. Reasons for dissatisfying
PLN Electricity – connecting grid	1		1. Yes 2. No	
Connection to a neighbor	2		1. Yes 2. No	
Solar panel – SHS	3		1. Yes 2. No	
Solar panel – SEHEN	4		1. Yes 2. No	
Car battery (without solar panel)	5		1. Yes 2. No	
Individual genset	6		1. Yes 2. No	
Genset in the village	7		1. Yes 2. No	
Other	8		1. Yes 2. No	

ADDITIONAL QUESTIONS FOR SECOND SURVEY

Ask Q. 52, for those who have no access to any of electricity source (code 10 in Q.46).

52. What made you having no access to any of electricity sources?

- Ask Q. 53, for those who have no access to PLN and for those who have no SEHEN, or for those who have no access to any of electricity source (check Q.46).
- **53.** Have you ever heard or known about SEHEN (Super Ekstra Hemat Energy) ?
 - Yes 1 → Go to Q.54

No 2 → Go to Q.63

54. Are you interested to own SEHEN?

Yes, interested	1	Go to Q.55, SKIP P. 56
Doubtful	2	Go to Q.56
Not interested	3	

55. You are interested to own SEHEN, but why haven't you had it until now?

SKIP P.56

56. What make you doubtful/not interested to own SEHEN?

Ask Q. 50, only for those who have no access to PLN (check Q.46 : CODE 1 NOT CIRCLED)

57. If there is a party that rents out lighting equipment, will you be interested to use the equipment if the rental price is.....(mention) per week for lighting equipment with 2 lamps

INTERVIEWER : start asking with rental price IDR. 10,000 (the highest price), IF RESPONDENT ANSWERS : Interested -> stop at the price; however if respondent answers 'NOT INTERESTED', continue asking with the lower price!

Rental Price per week for pieces of lamps	Interested	Not Interested
1. IDR.12.000,-	2	1
2. IDR.11.000,-	2	1
3. IDR.10.000,-	2	1
4. IDR.9.000,-	2	1
5. IDR.8.000,-	2	1

If until the price IDR. 8.000 per week, the respondent is still 'NOT INTERESTED', ask Q.54 b

57.b. At which price per week are you willing to take it ?

IDR	_ per week
99. Not interested to use it, r	o matter what the price is offered

Ask Q.58 s/d Q.62 only for those who use SEHEN (code 4 in Q.46 circled)

58. Regarding this SEHEN, how did you get it? Did you get it in free, paid monthly installments for certain periods, or paid fully in cash at front?

Got it in free	1	Go to Q. 60
Paid monthly installments for certain periods	2	Go to Q. 59
paid fully in cash at front	3	

59. What is your opinion about the money you paid for having the SEHEN?

It is worth with the benefits	4
It is slightly expensive compared to the benefits it can provide	3
It is quite expensive compared to the benefits it can provide	2
It is too expensive compared to the benefits it can provide	1

60. When SEHEN equipment (not the lamps) is out of order, do you know what you must do about it?

Yes	1	What you must do about it?
No	2	

61. For the next 6 months or 1 year, will you keep using the SEHEN ?

Yes, I will keep using it	1
Doubtful	2
No, I won't use it any more	3

62. All these times, what problems have you ever faced in using or utilizing SEHEN ?

63. Which of the following electric appliances you currently use?

Iron	1	Blender	11
Refrigerator	2	Mixer	12
Electric kettle	3	Washing machine	13
Magic Jar/Com	4	Electric sewing machine	14
Rice cooker	5	Computer	15
Electric stove	6	Printer	16
Fan	7	Mobile phone	17
CD/VCD/LC	8	Satellite receiver	18
TV	9	Air conditioner	19
Radio	10	Water heater	20
		None of above	99

Lighting appliances

64. Which lighting source do you own in your household ? how much do you have?

Normal electric bulb	1	unit	How many hours per day do you use the lighting lamps?
Neon/fluorescent tube	2	unit	jou doo alo ligg
Energy saver	3	unit	hour(s)
	Ŭ		
Rechargeable lamp	4	unit	
Battery-run lamp	5	unit	
···· / · · · ·			
Gas lamp (petromax)	6	unit	
Gas lamp (digester)	7	unit	
Hurricane lantern	8	unit	
Torch	9	unit	
Traditional tin lamp	10	unit	

The usage of Stove

65. On a usual day, do you have a meal....(ask one by one).

66. Ask for the answer 'Yes' only : How do you prepare the meal.....?

	P. 65	P.66
1. In the morning	1. Yes 2. No	1. cooking it
		2. only heating it
		3. eating the leftover meal as it is (from last night meal)
2. At noon	1. Yes 2. No	1. cooking it
		2. only heating it
		3. eating the leftover meal as it is (from the morning meal)
3. In the afternoon/evening	1. Yes 2. No	1. cooking it
		2. only heating it
		3. eating the leftover meal as it is (from the afternoon/evening meal)

67. What stoves do you use within this last one month? How many for each?

Q.68 up to Q.70 : ask for each stove use

- **68.** How often do you use it? (SHOWCARD)
- 69. On average, how long do you use it every time? (minutes)

70. For what purpose do you use that stove? M (SHOWCARD)

	P.67				P.70
Type of stove	Used (M)	Total stove	P.68 1. 3 times per day 2. 2 times per day 3. 1 time per day 4. 2 – 3 times per week 5. Once a week 6. seldom than once a week	P.69 (minutes)	 cooking meals for family consumption heating meals cooking something for income generating activity Boiling water for drinking Heating up water for bath Cooking feeds for animal Other purpose, specify)
Permanent woodfuel stove	1				
Semi permanent woodfuel stove	2				
Open fire (3-stone stove)	3				
Kerosene Stove	4				
LPG Stove	5				
Electric Stove	6				
Rice cooker	7				
Magic Jar/Com	8				
Biogas Stove	9				
Others:	10				

If currently using Woodfuel stove

71. In average, how much firewood per day you use now ? _____ kg

72. From where do you get the firewood? (M)

Buy	1
Own yards/farm (collected by their own)	2
Other people's land/farm (collected by their own)	3
Community forest (collected by their own)	4
State forest (collected by their own)	5
Company plantation (collected by their own)	6
Other, specify:	7

73. If collected by their own

		(S)
a. in what way most of the fire wood was collected	From cutting trees	1
	From picking up dried branches	2
b. How many times did this family collect th	times	
c. How much times spent every time for co	minutes	

74. The usage for other energy in the last 1 month

Source of energy	Usage	Price (IDR)	Total spending
1. Kerosene	liter/ month	/Liter	IDR/month
2. LPG	kg/ month	/Kg	IDR/month
3. Candles	candle/ month	/ candle	IDR/month
4. Firewood (if purchase – check Q.61)	bundle / month	/ bundle	IDR/month
5. Charcoal		/Kg	IDR/month
6. Batteries (lamp battery)	unit/month	/unit	IDR/month
7. Other, specify:	/ month		IDR/month
		Total spending	IDR

Time and division of work.

- 75. How many family members of adult male are involved in the activity of.....? And how much average time consumed (if calculating per day) for activity of(ask one by one) among males?
- 76. How many family members of adult female are involved in the activity of.....? And how much average time consumed (if calculating per day) for activity of(ask one by one) among females?
- 77. How many family members of Children- male (age : less than 13 y.o) are involved in the activity of.....? And how much average time consumed (if calculating per day) for activity of(ask one by one) among males?
- **78.** How many family members of Children female (age: less than 13 y.o) are involved in the activity of.....? And how much average time consumed (if calculating per day) for activity of(ask one by one) among females?

			Male		Female		Children male		Children female	
		Total person	Average time spent per person							
1	Looking after big livestock (e.g. horse, cow, buffalo)		mt/day		mt/day		mt/day		mt/day	
2	Looking after small livestock (e.g. pig, poultry)		mt/day		mt/day		mt/day		mt/day	
3	Fetching water (for all kind of purpose : cooking, bath, plant feeding, livestock, etc)		mt/day		mt/day		mt/day		mt/day	
4	Collecting dung		mt/day		mt/day		mt/day		mt/day	
5	Mixing of dung and water		mt/day		mt/day		mt/day		mt/day	
6	Collecting fodder/grass (if any)		mt/day		mt/day		mt/day		mt/day	
7	Collecting firewood (if any)		mt/day		mt/day		mt/day		mt/day	
8	Cooking		mt/day		mt/day		mt/day		mt/day	
9	Washing utensils		mt/day		mt/day		mt/day		mt/day	
10	Cleaning the bathroom		mt/day		mt/day		mt/day		mt/day	
11	Involvement for children education		mt/day		mt/day					
12	Studying again at home						mt/day		mt/day	

79. Who's owner of this following item?ask one by one!

			Q.79 – The owner (Multiple answer is possible)						
		The household : Head of household/ Male	The household: Spouse/ Female	The household: Both : male & female	Parents/ Relatives	Maramba	Other, specify:		
1.	This house	1	2	3	4	5	6		
2.	Farming land	1	2	3	4	5	6		
3.	Live stock (excluding poultry)	1	2	3	4	5	6		
4.	Poultry (if any)	1	2	3	4	5	6		
5.	Motorcycle – if any	1	2	3	4	5	6		
6.	Car – if any	1	2	3	4	5	6		

If this house is owned by the respective family (code 1, 2 or 3 circled), ASK Q.80; otherwise go to instruction before Q.81

80. What status of ownership of this house?

If the farming land is owned by the respective family (code 1, 2 or 3 circled), ASK Q.81, otherwise go to Q.82

81. What status of ownership of this faming land?

	Q.80. The house	Q. 81. Farming land
Certified – Proprietary right	1	1
Girik	2	2
No document at all	3	3

82. Who plays the decisive role in the following activities? (Single Answer) Ask one by one.

Code (SHOWCARD):	
1. Male member	
2. Female member	
3. Both (Male & Female)	
4. other, specify:	
a. Daily consumption expenditure.	
b. Selection of energy used (e.g.: installing electricity, whether or not using LPG gas stove, installation of biogas, etc)	
c. Children education aspects (e.g.: selecting a school, allowing or disallowing children to have higher education, etc)	
d. The use of agriculture/husbandry results (should it be stored for reserves, or sold to market)	
e. Determining the sales prices of agriculture/husbandry results?	
f. Purchasing animals/cattle	
g. Purchasing a land/house	
h. Purchasing other expensive goods (e.g.: TV, motorcycle, electronic goods)	

83. Did the household take up a loan within the last 12 months with a......(ask one by one)

84. Who did propose for the loan to?

			P.84							
Source of credit	P.83	Head of household/ Male	Spouse/ Female	Both : male & female	Other, specify:					
Relative or friend	1	1	2	3	4					
Shop	2	1	2	3	4					
Cooperative	3	1	2	3	4					
Rentenir (Ioan shark)	4	1	2	3	4					
Microcredit institution (e.g.: BPR)	5	1	2	3	4					
Multifinance company (e.g.: credit for motorcycle)	6	1	2	3	4					
Bank	7	1	2	3	4					
Landlord	8	1	2	3	4					
Maramba	9	1	2	3	4					
Other:	10	1	2	3	4					

85. Was the total loan taken up by this family (from various sources) in the past 12 years greater than IDR 3,000,000?

2

Yes. 1 No.

HEALTH AND SANITATION

86. Latrine Facility used.

Domestic latrine with protected/covered septic tank	1	River	4
Domestic latrine with waste canal to fishpond, drain	2	Open land/yard	5
Public latrine	3	Other, pls specify	6

Q.76 &77: appraisal by enumerator

87. KITCHEN CONDITION - Appraisal by Enumerator

a.	walls	1	clean	2	slightly dirty	3	quite dirty
b.	ventilation	1	good	2	satisfactory	3	poor
C.	kitchen equipment	1	clean	2	slightly dirty	3	quite dirty

a.	Amount of mosquitoes	1	None	2	Few	3	A lot
b.	Trash	1	None	2	Few	3	A lot
C.	Dung pile	1	None	2	Few	3	A lot
c.	Water tank	1	clean	2	slightly dirty	3	quite dirty

88. HOUSEHOLD ENVIRONMENT - Appraisal by Enumerator

HEALTH CONDITION

89. How many adult males suffer from the following health problems(ask one by one) in the last 1 year?

How many adult females suffer from the following health problems(ask one by one) in the last 1 year? ٠

	Diseases	Male	Female	Children (under 13 y.o
	Eye redness			
	Eye infection			
	Breathing difficulties			
	Cough			
	Tuberculosis			
	Diarrhea			
	Dengue			
	Malaria			
	Headache			
0	Fire related accident			

1

90. Have you ever heard about(Ask one by one)

For those who said YES in Q.90, ask Q.91 to 93

91. From what source did you know about(ask one by one) (M);

92. How interested are you to own/use(ask by one)

93. Why are you not interested to own/use it?

Type of Information	Q.90 Aware?	 Q.91. Source of Awareness 1. Friend/relative 2. Cooperative 3. Local government apparatus (Village Head, Ketua RW/T) 4. Officer from local government institution (Plantation, Energy) 5. Hivos/ BIRU officer, 6. other, please specify: 	Q.92 Interested?	P.93 Reason for doubtful/not interested
1. Biogas (source of energy is gas from animal manure)	1. Yes 2. No		 Yes Doubtful Not interested 	
2. Biofuel (fuels produced from plants, such as Jathropa, cassava, palm, etc)	1. Yes 2. No		1. Yes 2. Doubtful 3. Not interested	

94. Have you ever attended/participated in (read one by one)? (S) SHOWCARD

95. (If YES for each of Q.94): how many times did you attend/participate in(mention answer in Q.94) in the last one year?

96. If YES in Q.94: what role did you often take in the meeting (M)? (SHOW CARD)

	P.94	P.95	P.96 (M) 1. Just as a listener 2. Active in giving opinion/suggestion 3. take part in decision making
1. Attending a meeting at Vilage / Kelurahan	1. Yes 2. No		1 2 3
2. Attending a meeting at RT /RW	1. Yes 2. No		1 2 3
 Attending religious events/meetings (outside the routines) 	1. Yes 2. No		1 2 3
4. Attending traditional/cultural ceremonies	1. Yes 2. No		1 2 3

97. Who do you trust to voice or do for the interest of people like you? SHOWCARD (Multiple answer is possible)

Head of Village and apparatus	1
Maramba (landlord)	2
Chieftain/Rato (chief/Impam Marapu)	3
Religious figures (Pastor, Romo, ustadz, etc.)	4
Camat and apparatus	5
Bupati and apparatus	6

Police	7
Regional Parliament / DPRD	8
NGO	9
Mass Media (e.g. newspaper Koran, radio, etc)	10
Others, please specify :	11

98. What is your religion? (S)

- Islam (noble class) Protestant 1.
- 2.
- 3. Catholic
- 4. Hindu
- 5. Buddha
- 6. Konghucu
 7. Others, please specify
 98. NA

99. DK

What is your cellphone number? Or cellphone number of family member of this house ____

Hivos Regional Office Southeast Asia

Contact person: Sandra Winarsa, *Programme Officer Sustainable Energy* JI. Kemang Selatan XII/Nº 1 | Jakarta Selatan 12560 | Indonesia T +62 21 78837577 or 7892489 ext 138 E s.winarsa@hivos.or.id

Hivos Head Office

Contact person: Eco Matser, *Climate Change, Energy & Development co-ordinator* Raamweg 16 | 2596 HL Den Haag | The Netherlands T + 31(0)70 376 55 00 E e.matser@hivos.nl