

Production in Aquatic Peri-Urban Systems in Southeast Asia

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**Participatory Community Assessment in KBAL THOM NUB, BOEUNG THOM PUN
Quarter, Mean Chhey District (BOEUNG CHHENG EK Region), Phnom Penh.**

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Glossary

Acronyms and terms

EU	: European Union
INCO	: International Scientific Cooperation Projects
PAPUSSA	: Production in Aquatic Peri-urban Systems in Southeast Asia
PCA	: Participatory Community Assessment
RUA	: Royal University of Agriculture Phnom Penh

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Abstract

Participatory community assessment (PCA) plays an important part in Work Package1 of the PAPUSSA project. Its major objective is to describe the livelihoods, character, history, resources and problems of specific communities to be chosen for succeeding work packages.

KBAL THOM NUB, a village in southern part of Phnom Penh city, 5 kms from the centre of Phnom Penh, is one of the villages which was selected for carrying out a PCA as it is located in a peri-urban area of the city where morning glory is commonly grown and on the fringes of the nearby waste water fed lake (Boeung Cheung Ek). The PCA was carried out over 5 days from 27th – 31st October 2003 with 21 participating members from the village..

Wealth ranking in the village divided the community into four relative categories: Rich (3.05%), Average (51.6%), Poor (36.8%), and The Very Poor (8.99%) . Most people in the village are morning glory producers and fishermen whose livelihoods are mainly dependent on the nearby lake. Wild aquatic resources from the lake have almost disappeared because of human factors eg. pollution from wastewater drainage from the city and factories around the edge of the lake and overfishing.

Findings from the Activity Matrix tool used showed that the activities of the villagers varied considerably depending on their livelihood standard. Skin problems occur throughout the year for morning glory producers and fishermen because they are daily in direct contact with wastewater. Food consumption in the village includes: fish, morning glory, mimosa, water lily, turtle, serpent, beef, pork, chicken, duck, papaya, long-water melon etc; all of which are mostly bought rather than self- produced or caught from the wild. Low living standards were described as the main problem issue of the villagers. They also described other problems such as lack of support (funds) for their children to study, lack of investment capital for their farming systems, lack of housing and prevalence of human disease.

I. Introduction

PAPUSSA is a 3 year EC funded project, which started in January 2003 working in 4 South East Asian cities: Hanoi and Ho Chi Minh City in Vietnam, Phnom Penh in Cambodia and Bangkok in Thailand. Its objectives are to better understand and describe the varied aquatic production systems and the communities relying or affected by them in peri-urban areas of these 4 cities. In order to get a better understanding of these particular communities Participatory Community Analyses (PCA) were carried out in 4 selected peri-urban communities in each city. This report describes the findings of the PCA carried out between from 27th –31st October in Tnout Chrum village, Phnom Penh.

KBAL THOM NUB village is located in THOM PUN quarter, MEAN CHHAY district, which is in the southern part of Phnom Penh city around 7 km from the centre of the city. According to the Vice Chief there are 1114 households in the village which can be further divided into 18 different groups.

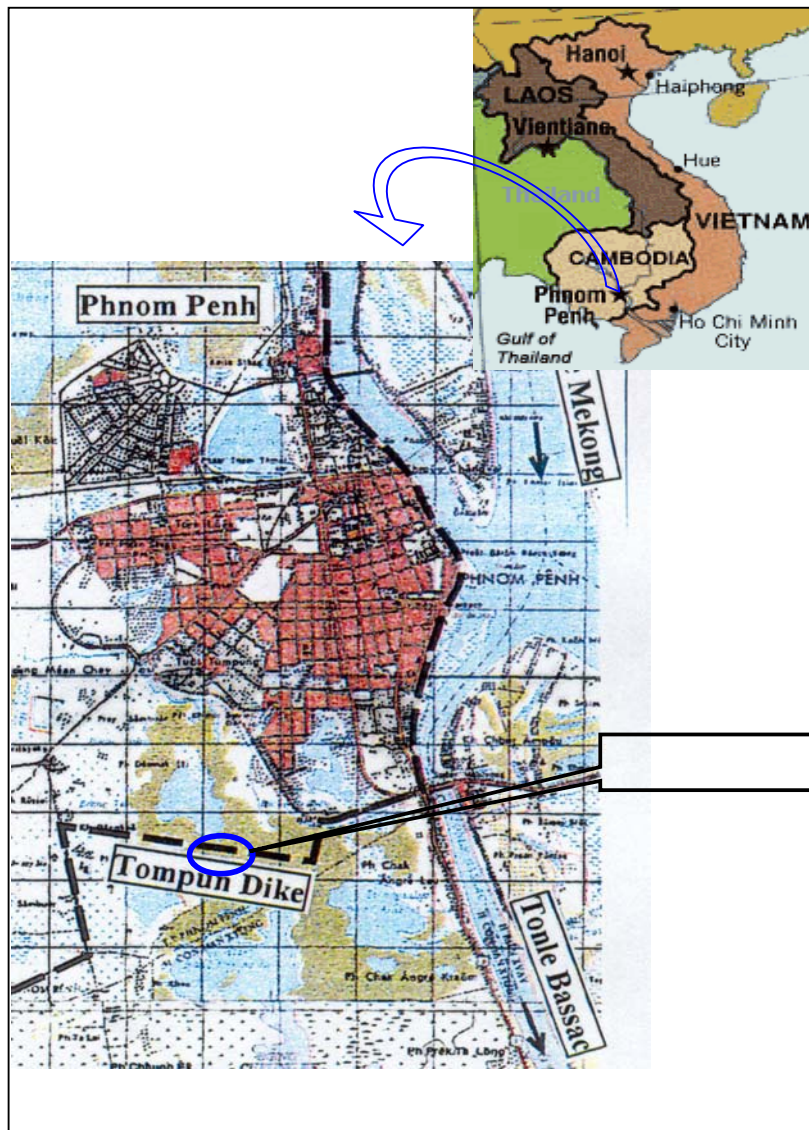


Figure 1.1 Map of Location of Kbal Tumsub village
Source: Bureau of Affaire Urbanism, Municipality of Phnom Penh

II. Methodology

The process of PCA in KBAL THOM NUB village started on 9th October, 2003 with a village visit in order to make contact with key informants as well as the local authority (Mr. Luk Chey) in order to collect information, a list of the households and people in the village from which a number of people were chosen to participate in the PCA. Twenty one (21) participants from 4 groups* (1st, 2nd, 3rd, and 18th) out of the original 18 groups were chosen to participate in PCA as they were considered representative by their livelihoods and daily activities of those living and working within the village.

The PCA process was done in 4 stages. **Stage 1** began on day 1 with the teams meeting the participants to introduce the team and objectives of the activities. **Stage 2**, activities were carried out during days 1, 2 and 3 with the implementation of the following tools:

- Wealth/ socio-economic ranking
- Community mapping
- Seasonal calendar
- Activities matrix (male, female, and children)
- Timelines
- Food consumption
- Resource mapping
- Problem/constraint ranking.

Stage 3, was conducted in days 3 and 4. Our working team analyzed and summarized what had been done. **Stage 4** was done in day 5 with a feed backing of our findings to the community and giving them the opportunity to validate the results of the PCA. During this stage also plans of project for the future were discussed.

* Administrative level under village (sub-village)

III. Result

3.1. Wealth/socio-economic Ranking

Village Wealth Ranking was carried out through the participation of the village leader, sub-village leader (key informants) to assess and divide the well being/ living standard level of people in the community. After Wealth Ranking these key informants divided people into 4 levels: rich, average, poor and very poor. The men and women key informant worked together to share an idea to set out the criteria for their village ranking (see Table 4.1). After this flip charts of criterion were shown to participants and ask them to fill the chart with the information of the all villagers wealth status

Figure 4.1 describes the wealth ranking of Kbal Tumnub village. Wealth ranking in the village divided the community into four categories: Well off (3.05%), the average (51.6%), less well off (36.8%), and poor (8.99%)

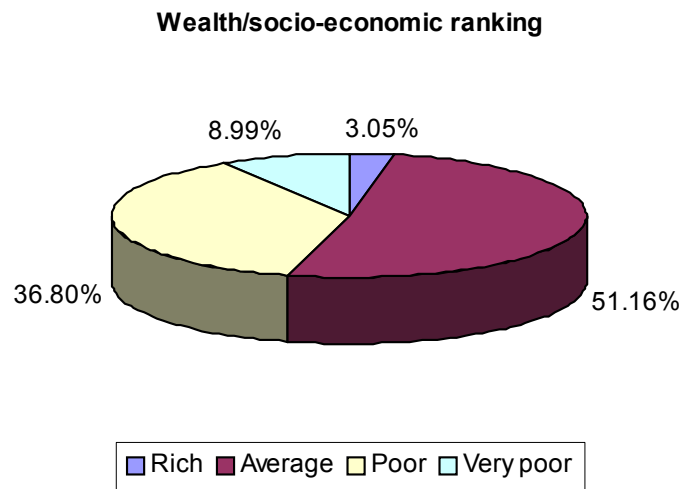
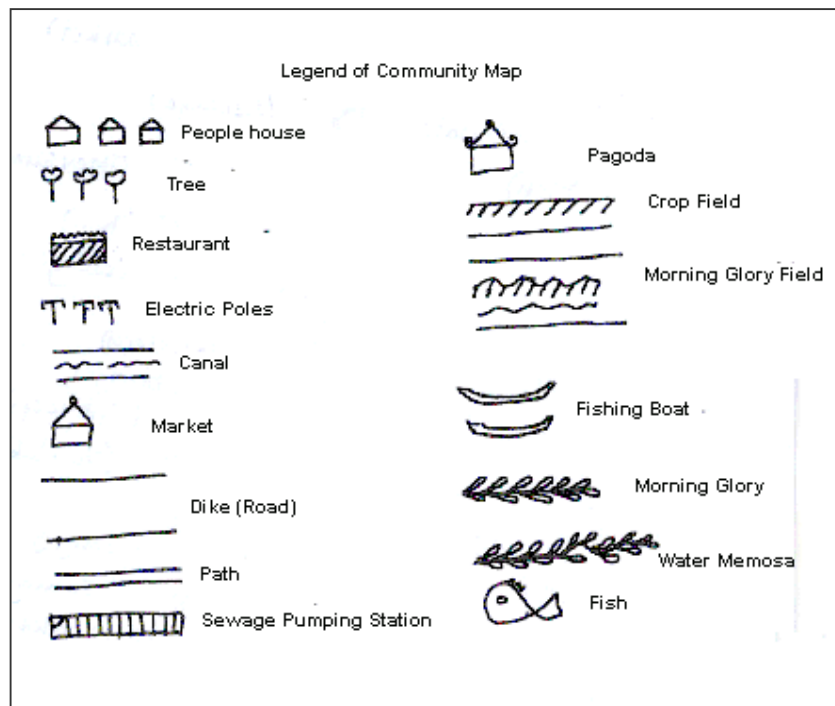


Figure 3.1: Wealth/socio-economic ranking of Kbal Tomnub village

Table 3.1. Wealth/socio-economic ranking

Criteria	Rich	Average	Poor	Very poor
Business	- Government officials, businessmen, sellers, Tax market collectors, those who rent out house or land.	Teachers, military, police, small scale sellers, motor-taxi drivers, growing morning glory (some own land and some rent land), physicians, and morning glory collector.	Morning glory grower, fishermen, motor-taxi drivers, garment worker, construction worker, small scale seller, well digger.	Rented-morning glory picker, beggar.
Agricultural Land	Owning much land	Half hectare of land	Around 1000 m ²	None
House	Apartment, villas, wooden house for rent	Wooden house from 2-3 parts made of brick or zinc for the roof.	Zinc or leaf roof-made house from wood	Cottage, shed on the boat or asking for other people for refuge
Vehicle	Car, high-series motor, high-priced bike	Medium-priced motor or bike	Low-priced motor or bike, old small boat (from 2-3 boats)	None
Education	Be able to send their child to study to college/faculty and sometimes send to study abroad.	Be able to only study secondary or high school.	Be able to only study secondary through supporting of NGO's eg SMILE and MARY KNOLL CATHOLIC SISTERS organization.	Only study at primary school, through help from other organizations (NGO).
Capital	To have money to give loans to other households	A little amount of cash, some loan from the rich in additional way.	Have to borrow money to buy materials	None
Income	From business, renting house, interest from lending money, goods selling, high salary	Salary, business, motor-taxi driver, morning glory grower.	Morning glory grower, small- scale business, fishing.	Picking morning glory or begging.
Assets	Cash, gold, precious stones, karaoke machine, portable phone, laundry machine, nice TV, nice tape recorder.	Small amount of money or gold, tape recorder, TV, low-priced mobile phone.	Radio, tape recorder, black and white TV using battery.	None



3.3. Resource Mapping

KBAL THOM NUB village is located on the banks of Boeung Cheng Ek Lake in BOEUNG CHHENG EK area. Referring to a description in the **Time-line activity** it was observed that previously this lake had plentiful natural aquatic resources available to local people thus in certain ways making people's livelihood at that time much better. People's demands for their food and income had been rising, and the previous civil-war factor tended to increase the depletion of natural aquatic resources from the lake. Following on from this the POL POT regime (1975-1979) didn't allow people to exploit or deplete the aquatic resources from the lake, at the fear of being killed or severely punished, thus interestingly aquatic resources actually increased during this regime. At the end of the regime after returning back to the area, people started fishing activities on a small scale in the lake again. Fishing and cutting down inundated forest increased concernedly. Presently natural aquatic resources in the Boeung Cheug Ek lake area are now very much reduced. Information quoted from participants said that the lake presently had planted lotuses, small stocks of fish, snails, freshwater shrimps, relatively few wild birds, PHLOV KANG KEB¹, lotus roots, water lilies, water mimosa, morning glory, snakes, and tortoises. People sell these wild caught resources to do business in the markets, but sometimes also for their own household consumption or sale to other people in the village. Besides the natural resources in the lake, villagers buy in or bring other food resources from outside sources (Figure 2).

¹): Kind of aquatic plant used as ingredient with Khmer noodle for Khmer-fish made sausage, very popular for Cambodians

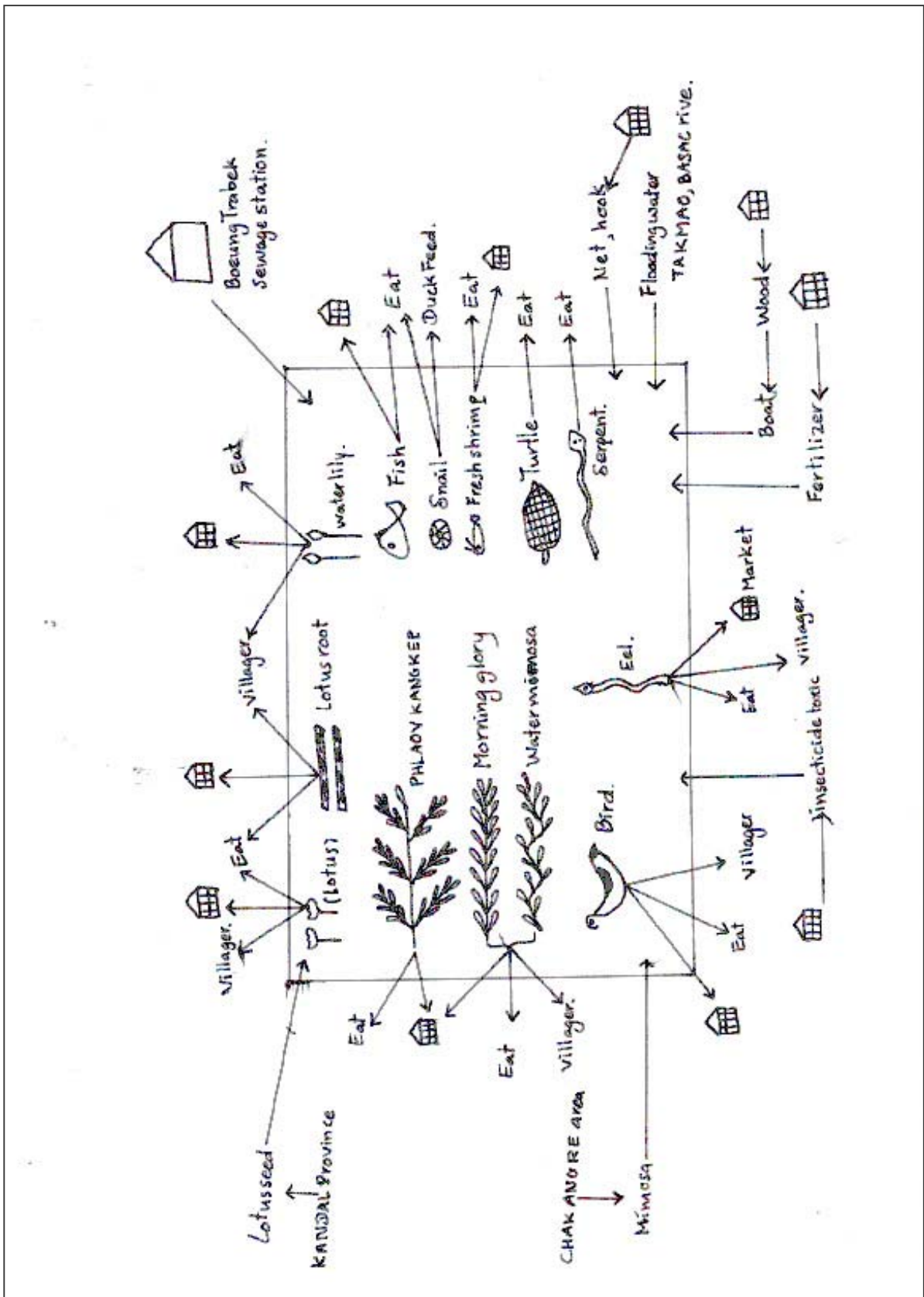


Figure 3.3: Resource Map of Kbal Tomnub village

3.4. Seasons and Weathers

The different seasons were described by villagers using the seasonal calendar tool. Cambodia's year mainly divides into two: dry season and rainy season, each approximately six months in duration. There is a cool wind during January to February. A slight rain, which is unexpected to come during dry season, come occasionally within March to May, then the rainy season begins in June/July and goes on until September. There is then less rain and a cool-wind from the north from October to December. The temperature gradually increases from March and become highest in April or May.

3.5. Historical profile of community (Time line)

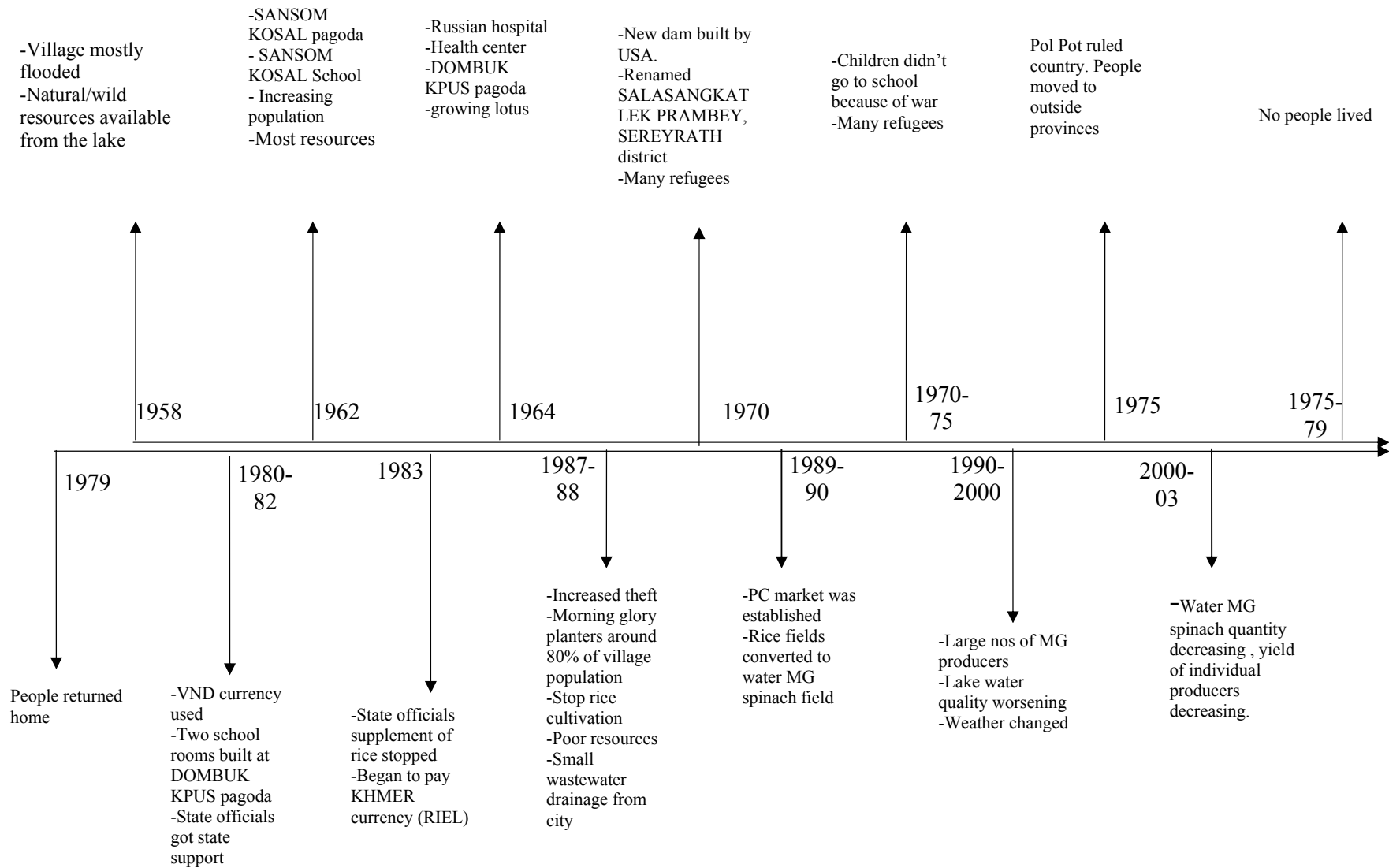
Table 3.5: Timeline of Kbal Tomnub village

Year	Event
1958	During that time, mostly the village was flooded during rainy season but there were many low hills. At that time the water of the lake was deeper and there were houses built on the old dam. At that time, there were all kinds of wild resources available to the villagers. Some of people cultivated rice planted some vegetable crops. Some others caught fish using a variety of different fishing gears eg, gill nets with 40-55 mm mesh size and hooks etc. The fish they caught included: Pale rasbora (<i>Rasbora aurotaenia</i>), common carp, big snake-head, <i>Neobarynotus microlepis</i> , and small snake-heads, <i>Henicorhynchus caudimaculatu</i> . There were many wild animals: monkeys, foxes, fish, cats, tigers, blackbirds, and many other kinds of birds. In that time there wasn't yet a school in the village. If the people wanted to go to market, they had to go to the Russian market in the centre of Phnom Penh. The villagers went to TOUL THOM PONG pagoda for any religious ceremonies. When they became ill, they had to go to the main hospital. The living standards of the people were adequate and through the natural resources in the lake they could comfortably supply their households with food.
1962	There was a pagoda and 7 rooms- a school with its wall and roof made of palm leaves which offered education only up to grade 7. By 1962 the village's population had increased with the plentiful natural resources still as before. The living standards of the people were still enough.
1964	There was a Russian hospital, health center, and DOM BUK KPOUS pagoda lotus built. The villagers start morning glory farming.

1970	In this year The New dam was built by America taking 3 months in its construction, then, there were more aquatic plants and crops grown such as cucumber, corn, green vegetables, morning glory, and water mimosa. At that time, during the Lon Nol regime (Khmer Republic-1970-75) this place was called Quarter No 8, in SEIRY RATH district. The living standards of the people were still okay, although at the time there was a civil war going on in the country. There were a lot of refugees from VIHEA SOUR, TAKOE, and KANDAL provinces who settled in the village. People were allocated to live around the New dam, because the government built a highway on the dam. Villagers started to cultivate dry rice, planted vegetables, and practiced fishing around the BOEUNG CHHEG EK region. The villagers then decided to recruit and elect a village chief after which the village was renamed PREK TRONAB village.
1970-1975	The population of the village increased further. None of the children were able to go to school because of the war. The living standards of people became worse. They heard the sound of cannons and shooting every day.
1975	The LUNOL regime was toppled. POL POT started to take over Cambodia under the signal of “Cambodian Democracy”, and the people here were evacuated out to live in other places around the country, which were far away from the village.
1975-1979	Between these years few people lived here as the village had been evacuated.
1979	People returned to their village, then changing the name of village to PY village.
1980-1982	Because our country had just come out of the POL POT regime, everything was destroyed with even Vietnamese Dong being widely used nationwide as the currency for business. People built a school of 2 rooms in DOM BUK KPOUS pagoda to serve the children for education. Gradually the village population increased again. As for state officials they were supported with supplies of rice from the state. A Solidarity group was created through cultivating rice, planting vegetables and fishing. In that time, there were a lot of wild resources in the lake as fisherman could get from 10-20 kg of fish per day only using a net, drag net or fishing hooks.
1983	Supplying rice to state officials stopped. Khmer currency (the Riel) was introduced instead of Vietnamese currency. The people’s livelihoods were better.
1987-1988	Theft in the village increased. Morning glory cultivators made up about 90% of the families in the village. In this year the Solidarity group was mobilized with . people starting to cultivate rice with its help. . Livelihoods were fairly difficult. Natural resources decreased noticeably. As for sewage pumping from the city into the lake volumes were still low and the weather was still nice. In the village there wasn’t any market; people had to go to market far from their houses. Products were sold in DEMKOR and CHBAR AM POV markets.
1989-1990	To serve the local economy, people in the village built “PeCe” market. Most of dry rice fields became converted to cultivating morning glory.

1990-2000	By this time the population of the village had increased drastically, many of whom were cultivating morning glory. The water quality in the lake noticeably began to worsen and the weather was hot.
2000-2003	Livelihoods have become more difficult. 90% of people in the village are fishermen and water morning glory cultivators. Insecurity has occurred in the village because of glue sniffers. Water quantity and production has decreased compared with the number of cultivators meaning that the majority of planters are getting lower volumes of water. Water in the lake has been worsening because of increased sewage pumping and the construction of factories around the periphery of the lake. Many diseases have happened to people especially skin-infected disease, bloody fever, and flu.

Figure 3.5. Timeline



3.6. Social characteristics of community

3.6.1. Social Events

Generally people in the village prepare for weddings throughout the year, but mostly they would like to marry from December to May (during the dry season) except July on Buddhist days. Chinese New year is in February. Khmer New year is celebrated every April so that people in the village are the same as each other as it is a Khmer tradition. The Buddhist ceremony is in July, and PCHHOM BEN (offering food to ancestors' spirit) in September, KATEN ceremony (Offering material for monks) is in October, and the water festival is in November. Other fiestas such as: Solidarity fiesta and Devotion fiesta, which they can celebrate on any day but they like to do this in August.

3.6.2. Housing Migration

People in group 18 of the village always migrate from their houses from August to October each year because of the rainy season, floods and rapidly rising water in the PREK TNOU area (neighboring area of Beung Cheung Ek). This forces some of the population to live on higher ground temporarily. But some people in the village change their houses to live outside the village because they escape from debt or selling their land.

3.6.3 Health

As described in the seasonal calendar, people in the village have flu from November to January. From June to December, they often feel dizzy because of the hot weather. As for children they sometimes have dengue fever and measles in September. Skin itchiness usually is a daily problem for morning glory producers because of daily contact with the lake water; this is particularly prevalent in April and May during the dry season when the water levels of the lake are shallow and the waste water more concentrated.

3.6.4. Income

The results from the seasonal calendar showed that the men's group tended to earn more money between January and March because their morning glory products commanded a higher price whilst also during the same period the supply is less. However the women showed that they earn less during these beginning months of the year. From October to November the men's group has average incomes whilst between March to June especially for the poor and very poor people they have low incomes as they get low output from their aquatic plant production due to an increase in pests and disease on their crops due to poorer water quality in the lake. During December the men's group mentioned that very poor people struggle in obtaining or buying food because they get very low incomes due to morning glory just starting to grow (a new crop) resulting in low employment for the poor as only few people are required during this time as hired labour as there is little morning glory to pick. People in group 18 are the most vulnerable because this group is the poorest amongst the village whose daily income is just enough to meet their daily expenditure. In contrast, the women's group showed that their incomes became better starting from July to December.

3.6.5 Food Consumption

It can be seen from the food consumption matrixes below (Table 4.4) that people in KBAL THOM NUB consume many different kinds of foods. Morning glory, mimosa, lotus root, green vegetables, banana flower, fish, chicken, and duck are all produced from their own households throughout the year. Food they can still find from nature and the local environment include fish, small prawns, snail, eel, water hyacinth flower, crab, and snakes.

Table 3.6.1: Seasonal Calendar (Men's group)

Activities	January	February	March	April	May	June	July	August	September	October	November	December
Weather												
Wind	Cool wind		Slight wind			Wind with rain			Wind from north with tide (small)			
Rain			Rare rain				Heavy rain			Low	Rare rain	
Heat				Heavy		Average						
Society												
Festivals	Solidarity festival						Solidarity festival		PHCHOM BEN	KAKTEN		
Weddings			Many		Average						Weddings	
Khmer new year				→								
Health												
Diseases	Catch cold		Diaorrhea					Flu fever		Blood Denver measles		Catch cold
	Skin diseases (Itchy) →											
	Worst time for skin problems											
Economics												
Vegetable cultivation	Start planting	Cut for selling										Soil preparation
Morning glory plant	Picking and harvesting a lot			Collect and remove old morning glory (MG) plants			Plant new MG also spraying insecticide					
Fishing	Low						High					

Activities	January	February	March	April	May	June	July	August	September	October	November	December
Motor-taxi	→											
Garment and construction worker	→											
Business	→											
Raise livestock	→											
Fish culturist	People living in flood								Sell			
	Sell							Stock fingerlings for culture				
Craft	→											
Pig Harvesting	→											
Business	→											
Pharmacy	→											
Incomes	Much			Very low, food shortage			Low		Average		Low	

Table 3.6.2: Seasonal Calendar (Women's group)

Month	January	February	March	April	May	June	July	August	September	October	November	December
Activities												
Morning glory plant	••••	••••	••••	••••	••••	••••	••••	••••	••••	••••	••••	••••
Fishing	•	•	•	•	•	••	••	••	••	••	••	••
Weighing	•	•	•	•	•	•	•	•	•	•	•	•
Garment worker	•	•	•	•	•	•	•	•	•	•	•	•
Morning glory cultivation	••••	••••	••••	••••	••••	••••	••••	••••	••••	••••	••••	••••
Hired labor for Picking morning glory	••	••	••	••	••	••	••	••	••	••	••	••
Construction Worker			•	•	•							
Selling fish	•	•	•	•	•	••	••	••	••	••	••	••
Selling vegetable	•	••	•	••	•	•	•	•	••	•	•	•
Selling house wares	•	••	•	••	•	•	•	•	••	•	•	•
NGO staff	•	•	•	•	•	•	•	•	•	•	•	•
Selling mats	•	•	•	•	•	•	•	•	•	•	•	•
Making Clothed cradles, pillows	•	•	•	•	•	•	•	•	•	•	•	•
Housewife	•	•	•	•	•	•	•	•	•	•	•	•
Blanket sewing, mosquito net	•	•	•	•	•	•	•	•	•	•	•	•
Cooked rice seller	•	•	•	•	•	•	•	•	•	•	•	•

Month Activities	January	February	March	April	May	June	July	August	September	October	November	December
Raising pigs	•	•	•	•	•	•	•	•	•	•	•	•
Dry season	•	•	•	••••	•							
Rainy season					•	•	•	•••	•••	•••		
Storm								•••	•••			
Flood						•	•	••	•••	••	•	•
Skin diseases	••	••	•••	•	•	•	•	•	•	•	•	•
Stomach ache			•	••	••							
Diarrhea				•••	•••							
Dizziness						•	•	•	•	•	•	•
Social activity involvement		•	••	•	•••							•••• Wedding
Income	•	•	••	•	•	•	•••	•••	•••	•••	•••	•••

Note: • Least Activity, •••• Most Activity

Table 3.6.3: Food consumption (Men's group)

Kind of food	Support		Buy			Nature			Self-produce		Government	
	January	February	March	April	May	June	July	August	September	October	November	December
Rice	_____→											
Beef	_____→											
Pork	_____→											
Fish	_____→ _____→											
Chicken	_____→ _____→ _____→											
Duck	_____→ _____→											
Green vegetables	_____→ _____→											
Rooted-vegetables	_____→											
Processing fish	_____→											
Eggs	_____→											
Crabs, snakes, frogs, snails, toads.							_____→			_____→ _____→		

Table 3.6.4: Food consumption (Women's group)

Kind of food												
	January	February	March	April	May	June	July	August	September	October	November	December
Pork	—————→											
Beef	—————→											
Fish	—————→											
Chicken	—————→											
Duck	—————→											
Small	—————→	-----→										
Crab								—————→				
Frog	—————→											
Toad								—————→		—————→		
Snail									-----→			
Eel	—————→											
Morning glory	—————→											
Water mimosa	—————→											
Lotus root			—————→									

Kind of food												
	January	February	March	April	May	June	July	August	September	October	November	December
Water lily	—————→											
Flower of hyacinth												———→
Phlov Kang Keb (shallot)	—————→											
Cabbage	—————→											
Green vegetables												—————→
Papaya	—————→											
Long-water melon	—————→											
NONONG (kind of crop land)	—————→											
String bean	—————→											
Banana	—————→											
Eggplant	—————→											
Pumpkin	—————→											
Round-water melon	—————→											
Rice	—————→											
Corn	—————→											
Peanut	—————→											
Cucumber	—————→											

3.7. Activity Profile in the community

3.7.1. Activity Matrix for Women

They get up differently. Some get up at 3 am because they are busy in their work, especially for fisher folk. Many get up at 4 am and 5 am, particularly morning glory pickers, They have different activities such as: picking morning glory, cleaning the house, laying fish nets, mobile-weighing service, selling mats, having breakfast, selling food (rice), shopping in market, watching TV, selling fish, lunch, dinner, taking a bath, sleep, making clothed-floor mats.

Table 3.7.1: Activity Matrix for Women

Hours Activities	Early morning					Morning							Noon					Evening						
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Getting up			✓	✓	✓								✓	✓	✓									
Picking/harvesting morning glory			✓	✓	✓																			
Laying fish nets			✓	✓	✓			✓	✓	✓	✓		✓	✓	✓									
Cleaning the house						✓	✓																	
Mobile-weighting service						✓	✓																	
Selling mats						✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓							
Breakfast						✓	✓																	
Selling Food (rice) cooking for lunch						✓	✓			✓	✓						✓	✓						
Shopping in market								✓	✓															
Lunch											✓	✓												
Watching TV													✓	✓										
Selling fish															✓	✓								
Taking a bath																		✓	✓					
Dinner																		✓	✓	✓				
Watching TV											✓	✓												
Sleeping																			✓	✓	✓	✓	✓	✓
Making clothed-floor mats						✓	✓	✓	✓	✓	✓													

3.7.2. Activity Matrix for men

There is not much difference between the daily activity of men and women in the village as described in the activity matrix. Some men are also involved in housework eg. helping their wife with kitchen work like cooking rice. Men were found to get up earlier than women (3 am, 4 am, 5 am and 6 am) for picking morning glory, then retained in the field for, morning glory maintenance), the men tend to go for laying fish nets till evening but woman do this only in the afternoon. There are some activities that men tend to be involved in more compared to women such as teaching children, religious work in the pagoda, and looking after fish ponds. Some business such as selling fish, mobile weighing service, selling food and selling mats were only involved by women

Table 3.7.2: Activity Matrix for men

Hours \ Activities	Early morning					Morning							Noon					Evening							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
Get up			✓	✓	✓	✓																			
Breakfast						✓	✓																		
Picking/harvesting morning glory			✓	✓	✓	✓																			
Working at morning glory field							✓	✓	✓	✓															
Opening store						✓	✓																		
Laying fish nets															✓	✓	✓	✓							
Lunch & dinner											✓	✓						✓	✓						
Cleaning house									✓	✓															
Cooking food											✓							✓	✓						
Doing exercise					✓	✓																			
Work in a pagoda							✓	✓	✓	✓															
Resting													✓	✓					✓	✓	✓	✓	✓	✓	✓

Hours Activities	Early morning					Morning							Noon					Evening						
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Motor-taxi																								
Look after fish														✓	✓	✓	✓							
Watching TV																			✓	✓	✓			
Teaching children																				✓	✓			
Helping in selling business							✓	✓	✓	✓														
Chatting														✓	✓									
Listening to radio																				✓	✓	✓		
Preparing bed for rest																				✓				
Taking a bath						✓	✓											✓	✓					

3.7.3. Activity Matrix for Children

a. Activity Matrix children (male)

There are different actions of different children in the village. After getting up, they have many activities such as: picking morning glory, shoe-shining service, house work, watching TV, helping their parents' selling business, going to school, taking a bath, part time study. However, female children were described as being involved in harvesting morning glory in the very early morning (3 to 6 am) while male children go to harvest around 7 to 10 am.

Table 3.7.3: Activity Matrix Children (male)

Hours Activities	Early morning					Morning							Noon					Evening							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
Getting up					✓	✓																			
Taking a bath						✓																			
Opening store						✓				✓				✓											
Go to school						✓																			
Harvesting morning glory							✓	✓	✓	✓					✓	✓									
Food preparation for pigs							✓								✓	✓			✓	✓					
Watching TV											✓	✓													
Lunch & dinner											✓	✓						✓	✓						
Attending private course																	✓	✓							
Reviewing lesson																			✓	✓	✓				
Resting													✓	✓						✓	✓	✓	✓	✓	✓
Taking a bath						✓												✓							

b. Activity Matrix Children (female)

Table 3.7.4: Activity Matrix children (female)

Hours Activities	Early morning					Morning							Noon					Evening							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
Getting up			✓	✓	✓	✓																			
Harvesting morning glory			✓	✓	✓	✓							✓	✓	✓	✓	✓								
Going to school						✓	✓	✓	✓	✓			✓	✓	✓	✓	✓								
Lunch & dinner											✓	✓						✓	✓						
Shoe-shining service						✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓								
Boat service						✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓								
Attending private courses						✓	✓						✓	✓			✓	✓							
Housework											✓	✓		✓	✓	✓	✓	✓							
Watching TV											✓	✓					✓	✓		✓	✓				
Sleeping																			✓	✓	✓	✓	✓		
Reviewing lesson					✓	✓											✓	✓							

3.8. Resource problems

3.8.1. Problems in morning glory production

Because of the chemical waste discharges from nearby factories and the sewage wastewater from Phnom Penh city it appears that water quality in the lake is deteriorating rapidly. A plant disease locally known as “KRA SY”² occurred throughout the year. It is likely to most destroy morning glory during the dry season. In order to protect from this disease the villagers routinely spray their morning glory with pesticide once a week. Another major problem that the morning glory farmers face is damage and destruction to their floating “rafts” of morning glory in the lake due to strong winds and storms during August to December.

3.8.2. Problem ranking

This Problem Ranking tool was done together by, both the male and female groups. Beans were used for ranking each problem. 19 problems were described by the groups, and 38 beans were given to the participants to score the relative importance of each problem.

Through the activity of problem ranking participants showed that their main problem was “lack of capital for investment” which is the first major problem in the village. The second problem was “lack of home and bad home condition”. The people who recently migrated from the provinces don’t have their own house due to the high price of land, However, people who originate in the village have problem of bad home conditions as they find no improvement of their livelihoods so far. The third problem is “Glue sniffers and theft”, and fourth is “human diseases”

Table 3.8.1: Problem ranking

No.	Problem	Women	Men	Total	Ranking
1.	Blockage of sewage system	10	15	25	17
2.	Debt	32	8	40	8
3.	Lack of home and bad home condition	52	19	71	2
4.	Shortage of clean water and electricity supply	15	19	34	11
5.	Chemical pollution from factories	16	27	43	5
6.	Skin problems -itchiness	18	5	23	19
7.	Bad surrounding environment	11	11	22	20
8.	Lack of capital for investment	53	22	75	1
9.	Paths difficult for walking	11	17	28	14

² Kind of disease that makes morning glory leaves turn yellow and its stem decayed within a week – thought to be caused by a worm

10.	Glue sniffers and theft	11	35	46	3
11.	Human Health problem	24	21	45	4
12.	No health center	17	10	27	16
13.	No toilet in their houses	16	12	28	14
14.	No school	20	17	37	9
15.	No shop	14	21	35	10
16.	low morning glory productive and low prices	9	15	24	18
17.	Lack of crop land	13	19	32	13
18.	Insufficient markets for morning glory	6	10	16	21
19.	Orphanage	15	19	34	11

IV. Conclusions and recommendations

From the findings of the PCA in Kbal Thom Nub village we were able to conclude that people in the village have their health and at times their livelihoods adversely affected through their daily work in morning glory cultivation and living closeby to the waste water lake which receives waste water from Phnom Penh city and effluents from other factories on the periphery of the lake. In the dry season the lake is shallower, thus the negative effects of waste water from the city and discharges from factories is far more concentrated than during the rainy season.. Morning glory production in the dry season experiences difficulty because of water quality causing problems and loss of production with diseases on the plants (especially “KRASY” disease), whereas in the rainy season morning glory production is higher because the water quality of the lake is better due to the considerable dilution from rainfall and inflowing water from the Mekong river. It is not only morning glory but also fish stocks which are adversely affected by the deteriorating quality of water in the lake. For the villagers, the rainy season causes many diseases especially for children (dengue fever). Travel and movement of local people in the rainy season is problematic because the drainage system of the village is not effective and has not been improved. Nowadays the benefits of fishing for wild fish in the lake are very limited because fish stocks are nearly depleted. Lack of capital for investment was found as the main problem of the village during the PCA. Villagers need a certain amount of capital for investment at the beginning of morning glory production, it is likely that most of them are involved in debt for buying wooden poles, morning glory seed and chemicals. Villagers also felt that lack of housing was a problem as some of them are migrating into the city from other provinces. Also family members who have just separated from their original main families due to marriage may need to find plots of land for building houses with local land being owned by few individuals who will only sell for inflated prices.

Villagers put little measure on exposing themselves to contaminated water in the lake during their regular activities in morning glory production. They gave very limited responses to those skin problem by applying some cream without intention.

Finally villagers are not sure of their future and appear to give little attention to what happens in the future in relation to their production system. Few took concern over land-use change in the future however they believe future change would be positive for them.

Recommendations of participants and work team:

A-Participants

- Support improvements in sanitation especially to build WCs.
- Support improvements in sewage system in the village.
- Construction of a local health center.

B-Work team

- Recommend that this village can be used in the next phase of the Papussa project process.

Appendix A

Schedule for PCA in KBAL THOM NUB

Day 1			
Time	Actors	Activities	Others
8:00-8:30	Team leader	-To introduce himself and numbers of team working -To explain the project -To explain objectives and activities of the PCA	
8:30-11:30	Working team and participants	-Community mapping -Wealth/socio-economic ranking	
11:00-12:30	-	-Lunch	
13:00-15:00	-	-Seasonal calendar -Activities matrix	
15:00-16:30	Participants	-To present methods of the above tools	
Day 2			
8:00-11:30	Working team and participants	-Timeline -Food consumption	
11:30-12:30	-	-Lunch	
13:00-15:00	-	-Resource mapping -Problems/containing ranking	
15:00-16:30	Participants	-To present findings of above tools back to villagers	
Day 3			
8:30-12:00	Working team	-To analyze and produce summary	
12:00-13:00	-	-Lunch	
13:00-16:00	-	-To analyze and produce summary	
Day 4			
8:30-12:00	Working team	-To analyze and produce summary	
12:00-13:00	-	-Lunch	
13:00-16:00	-	-To analyze and produce summary	
Day 5			
8:00-11:30	Working team and participants	-To present back to the participants our findings from the PCA tools over the, last 3 days and then to validate or not this information -General discussion -To celebrate to close the PCA	

The PCA research work team from RUA:

- 1- Mr. CHHOUK BORIN
- 2- Mr. THAK KUNTHEANG
- 3- Mr. SREY SAM AN
- 4- Ms. SOK DAREAM
- 5- Ms. CHHIM RUMUNY

List of participants from the village

No.	Name	Sex	Comments
1	LUK CHHAY	M	Chief
2	NUN YAN	M	Vice chief
3	SOUS LOEUNG	M	
4	LENG HOR	M	
5	MER OUN	M	
6	UK SAREN	M	
7	IM MAY	M	
8	IM IM	F	
9	KHIM ROEUN	F	
10	KOE VANNA	F	
11	TUY SOK	F	
12	MIN SAMON	M	
13	SEUNG KRUY	F	
14	CHAN SARY	F	
15	HENG SRENG	F	
16	HEM PHANN	F	
17	SOMRITH MENG	M	
18	KEM THEN	F	
19	BIN SAROM	F	
20	PONG THAN	F	
21	SIM ITH	F	

Appendix B: Photo Snap Shots



Activities of participants (men)



Activities of participants (women)