



STREAM



Report on

Sustainable livelihoods
study of Farmer and Fisher

in

Koh Reusey Village, Prorlay Meas Commune,
Kampong Leng District, Kampong Chhnang Province

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SUMMARY

The study was conducted in Koh Reysey village, Prorlay Meas Commune, Kampong Leng District, Kampong Chhnang Province.

The main objective of the study is to understand the villagers' standard of living, hardship, external impact, present and future demand. The team spent 5 days in village, starting from 27th June to 01st July, 2002. The team interviewed with 15 to 60 villagers including men, women, young and old villagers, represented 135 families in the village.

The main occupations of the villagers are farmers cultivating rice on 299 hectares of seasonal rice and 61.8 hectares dry season rice and fishers. Beside that, they have other occupations such as repairers, making thatch.

There is no formal transfer of knowledge it is based on traditional passing from one to another.

The main natural resources available in the village are: a lack, a river serving as fishing ground and source of water supply to crop farm and dry season rice. A community fishery is established in order to protect and manage natural resources and resolve any problems occur in the village

The villagers have tradition and culture of helping each other, especially in the events such as celebration or ceremony in the village, exchange between villagers who have mean for agricultural production (the rich) and villagers who have labor (the poor).

Seasonal activities of men and women and the changing of resources, events in the village are shown on figures. It indicated the increasing population, changing of crop and decreasing of fish population in the wild, price fluctuation of agricultural product, destruction of crop by insect, use of pesticides, river bank erosion and use of agricultural machinery.

There are some concerns over the serious effect in the future of river bank erosion, destruction of crop by insect, use of pesticides, and increase of population. In addition, the villagers face a number of difficulties such as can not access to market to sell product so middlemen set the price by themselves, high interest rate, few teachers and hospital is far away from the village as result number of poor people increased.

Government institution and civil society are the two main institutions that impact on their livelihood. There are 15 critical issues that very poor, poor and fair villagers faced. However, lack of credit, seed, boat and fishing gear are the 4 immediate issues that need to be solved.

Information provided by villagers on their living condition and problems occurred as follow:

- The established community fishery committee was not be able to manage their natural resources. Majority of villagers do not realize the benefit of organizing community fishery.
- Villagers still heavily depend upon the natural resources and these nature factors.
- Villagers use pesticide and inorganic fertilizer base on their habit, not technical instruction which may effect on crop production and their health.
- Village land area, crop farm area and fish sanctuary area decrease subsequently as due to strong wave of speed boat.
- Increase number of very poor and poor people.

1. INTRODUCTION

1.1 Location

Kompong Chhnang is one of the 24 provinces, situated in the middle of Kingdom of Cambodia, border east to kompong Cham Province, west to Pursat, south to Kompong Speu and Kandal and north to Kampong Thom province with total area of 552,100 hectares, of which 136,000 hectares are agricultural land.

We can travel to Kompong Chhnang by national road N° 5, 93 kilometers from Phnom Penh or we can also travel by boat along Toule Sap river about 110 km. National or international guests arrive in Kompong Chhnang Province, they always visite Kong Rey mountain, which is the famous cultural site and also it has Tonle Sap which provide fish for local consumption and exported to other countries.

Kompong Chhnag consists of 8 districts with total of 69 communes and 546 village, and 487,993 of total population (census in 1998). Among 8 districts, there are 6 districts border to domain fishery. They are Kompong Trorlarge, Choul kiri, Relear phaear, Kompong leng, Boribo, and Kompong Chhnang districts. We selected Kos Rouesity village which is situated in Prolay Meas commune, Kompong Leng districts to study.

Kos Roeusey village is an island, which flood during flooding season. It is 12 Kilometers from Kompong Chhnang Province, situated northwest. This village share borders east to Koh korbey village, west to Stung Chhruov village, North to Tadout village and south to Krorpeu Pul village.

The village has total area of 399.38 hectares, of which 14.52 hectares is homestead area, 61.80 ha is dry season rice, 299.23ha is crop plantation and 23,83 ha is free land. Beside that land clearance since 1979 was 91.94 ha, land bought from outside village were 13.47 ha and land rent from outside was 148.89 ha.

1.2 History of Koh Reusey Village

According to old people in the village it was said this village was appeared 60 years old. Originally, it was an island which full of bamboo and no people lived there only fishermen who took a rest during day time. Before this village named was not as today, it was called " Koh Rearsy" (Fortune island) because people believed that all the fishermen stayed there never get any accidents. The bamboo on the island disappeared gradually due to consumption of people from everywhere.

In 1960 there were 4 families namely Ta Kem Yeay Pom, Ta Prak Yeay Thim, Ta Kong Yeay Bos, Ta He Yeay Mom, who moved from Svay proteal and Kos Kor communes Sa Ang district, Kandal Province to settle on the island called "Reusey " and this word became Koh Reusey like today.

In 1975, Pol Pot regime had evacuated all the villagers from village to other area. After few months they let some villagers and outsider to turn back in order to grow strategic crop. In 1978, again they evacuated people to live at Thmey village, Psa commune, Boribo district, Kompong Chhnang Province.

In 1979, after liberation, people used to lived in the village no one returned, thy live other area and some live in Ampil Toll village, Pong Ror commune, Rolear Phoea district. In 1980 , The villagers lived in Peam Gnor village and few months later, they removed to Po Andet village. In 1981, they moved to live in Prolay Meas village, Prolay Meas commune near Koh Reusey village and in 1982 they return to this village.

II. RESULT

2.1 Wealth ranking

Koh Reusey village is one of the village with people adjacently construct houses and most of its made from tile, zinc or palm leave roof and high rise above land to prevent flood. If we take a look, people seem to have good standard of living. However, the villagers complained that most of them are poor and they classify themselves into 3 groups: very poor, poor and fair. There are 78 very poor families, 49 poor families and 8 fair families (Table1).

Table1: wealth ranking of people in Koh Reusey village

Type	Very poor	Poor	Fair
Houses	-No house, live with parents or relatives - House or cottage -Moved or repair every year	-House made of zinc tile roof, wall made from -Repair every year	-Wooden or brick house with zinc or tile roof
Crop land	0.32-1ha	1-2 ha	2-5ha
Fishing gear	1-2 Gillnets 1 Homdled pick out	-1-3 Gillnets -1-2 homdled pick out	1-2 Gillnet 1 homdled pick out
Mean of transport	a small boat or 1 motorized boat	-1 small boat -1 motorized boat	-1 boat - 1-2 motorize boats
Plowing machine	No	Some families have	All families have
Members in family	4-12	4-8	4-6
labor	Few labor (many children)	many labor (hired some labor)	hide labor
Credit	Can not borrow money	Can borrow money with mortgage	Easy to borrow money
Food security	Not enough	Not enough	Enough
Health	- Ill frequently -weak - In most case when they are sick, they have to wait until they have serious ill and then they have to sell boat to cure their illness	- Ill frequently -When they are sick they treat immediately	- Ill not frequently - They have enough money to pay for their treatment.
Other assets	- Radio	- Radio, cassette player -TV	- Radio, cassette player, TV -Generator -Radio communication

Very poor family

Among 78 (56%) very poor families, there are 33 families haven't got own houses, living with parents or relatives and other have huts or very old houses. During flooding season some families have to use bamboo to float their huts and other move to live with their parents and wait until water go down. They have some small land. During growing season they have to hired land from neighboring villager and they have to sell products to pay debt and land fee. They have 1-2 gillnets (1net = 60-80m) (these gillnets was advanced by middlemen) and 1 homdled pick out. They have to sell fish to middlemen in cheap price, if the middlemen know debtors sell fish to other, they will ask the debtors to pay money back or confiscate the asset. They can not borrow money from other unless they have some asset to deposit or they have to depend on poor family to borrow money for them.

Poor families

They have wooden house with tile or zinc roof, 1-2 hectares of land, 1-3 gillnets 1-2 homdleds pick out. They can buy fishing gears by themselves or partly borrow money from other and fish caught were processed for fish past, fermented fish and smoke fish. They have boat or engine boat and they can borrow money from other because they have something to mortgage.

Fair families

They have wooden house with tile or zinc roof and some families have brick houses. They also have 2-5 hectares of land, 1 boat, 1-2 engine boats, 1 plowing machine and they have better off than the two group families above.

2.2 Resources

2.2.1 Human resources

The main occupations of villagers are farmers and fishers. They also have other occupation such as boat repairer, battery charge person. They also have other knowledge include know how to ride plowing machine, repair machine, make trap, process secondary crops, process fish product and culture fish. Beside that there is one traditional birth attendance, one village health care person, 5 teachers, one Achar, 6 garment workers who each can earn US\$ 20-40/month.

Table 2: Main resources available in Kos Reusey Village

Human Rescuers	Infrastructure	Natural Resource	Social structure	Income sources
<ul style="list-style-type: none"> -Students -Know how to grow rice and crops - Know how to fish and process it - Boat repairers - 1 traditional birth attendance -3 families culture fish - Mechanic - Garment workers - Village chief - Archar (priest) - A trap maker - A battery charge person - 1 village health care person -blacksmith 	<ul style="list-style-type: none"> - Water system -a primary school - 1 rural road -6 stores - 1 battery charge shop -1 blacksmithing shop - Public house 	<ul style="list-style-type: none"> -River surround village - 1 lake - Crop fields - Dry season rice fields - Wild animals - Flooded forest - Unused land 	<ul style="list-style-type: none"> -Village committee - Community fishery - Exchange labor - Solidarity among villagers -Buddhist religion 	<ul style="list-style-type: none"> -Sell product -Sell fishery product -Labor rate (2000r-4000R) -Hire plowing machine - Cutting firewood - Sell steel iron - Garment worker

2.2.2 Infrastructure

There is 1 rural road, water traffic which can travel either in rainy season and dry season, 1 primary school which have 5 rooms, 6 stores, 1 blacksmithing shop, 1 battery charge shop and 1 public house where village's ceremony take place.

2.2.3 Natural resources

There are 191.5 ha of which 10.8 ha is homestead, 174 ha is secondary crop, 5 ha is dry season rice and 5 ha is flooded forest. There is 1 lake for villagers fishing in dry season and irrigate secondary crop. Wild animals such as snakes, turtles were also found in the village.

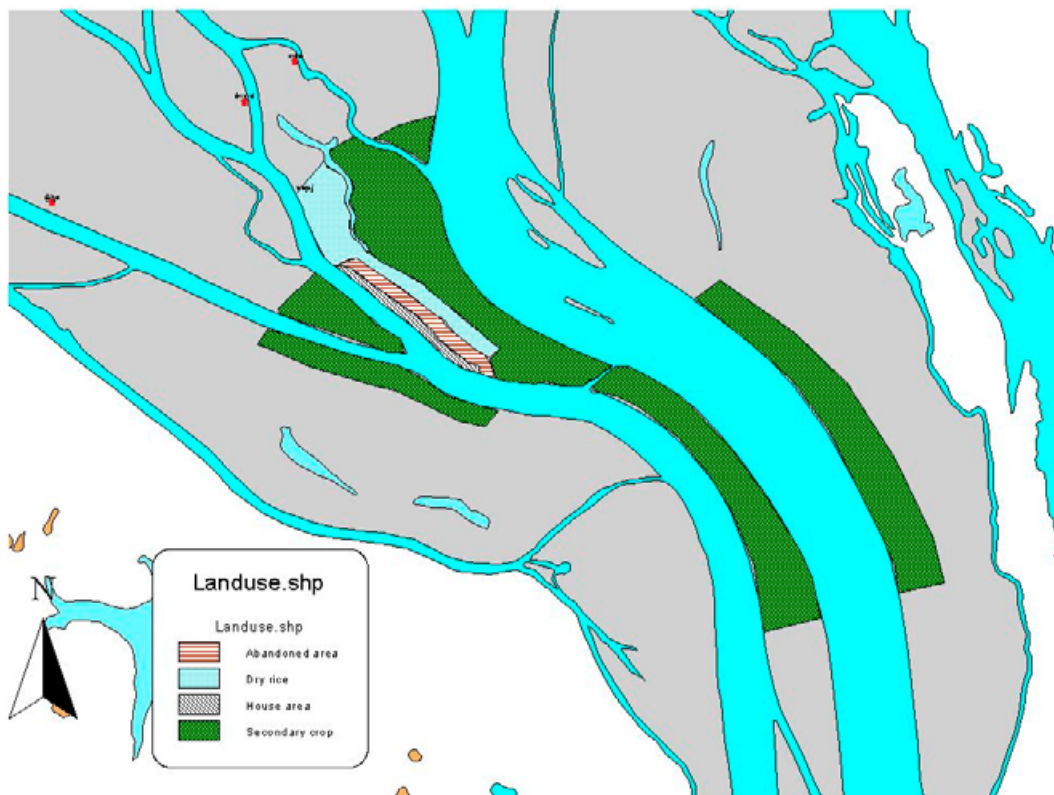


Figure 1: Land use map of Koh Reusey village

Base on the measurement of area on map, the total area of village is 399.38 ha of which 14.52 ha is homestead, 61.80 ha is dry season rice, 299.23 ha is secondary crop and 23.83 ha is unused land. Beside that villagers cleared 91.94 ha of flooded forest outside of village in 1979, 13.47 ha was bought from adjacent villagers and 148.89 ha rented from outside villagers.

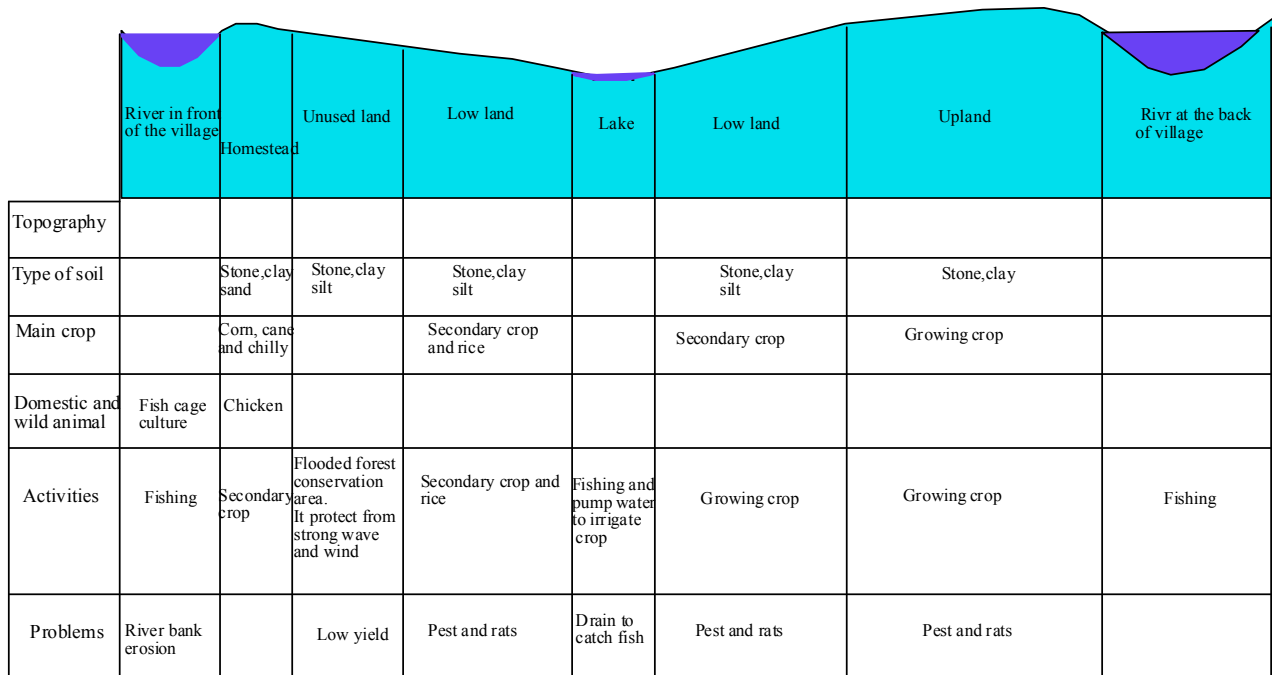


Figure 2: Topographical transect of Koh Reusey village

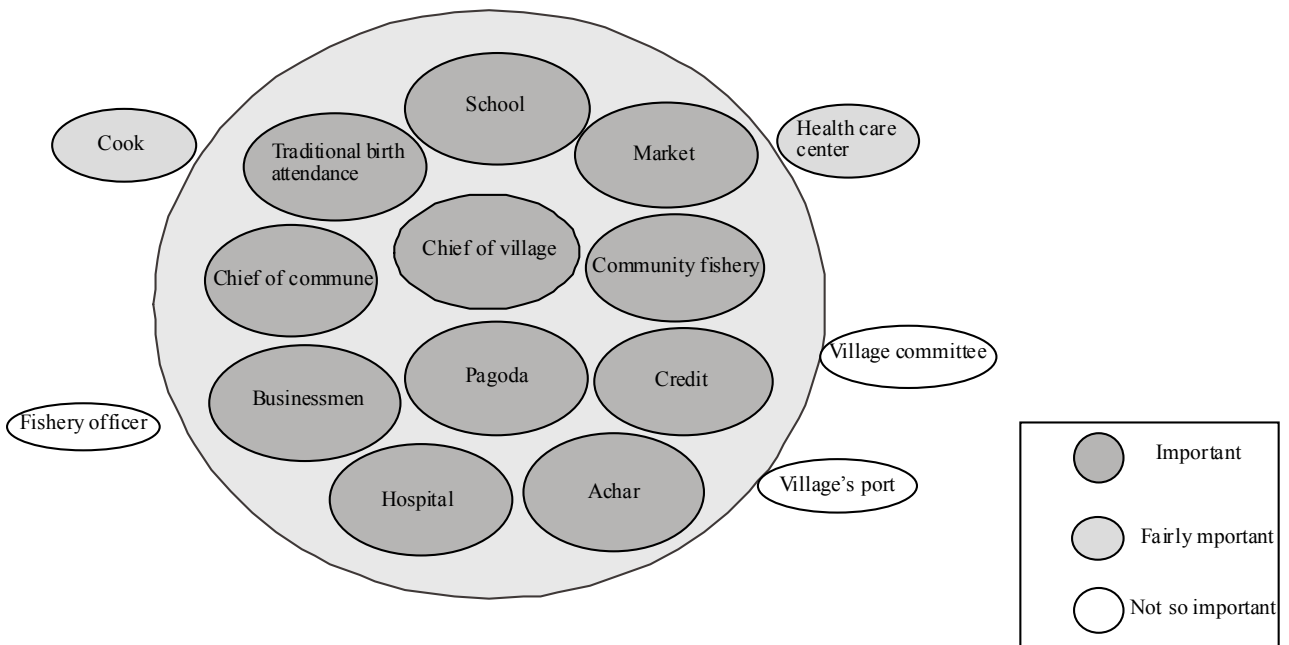


Figure 3: Men's Venn diagram

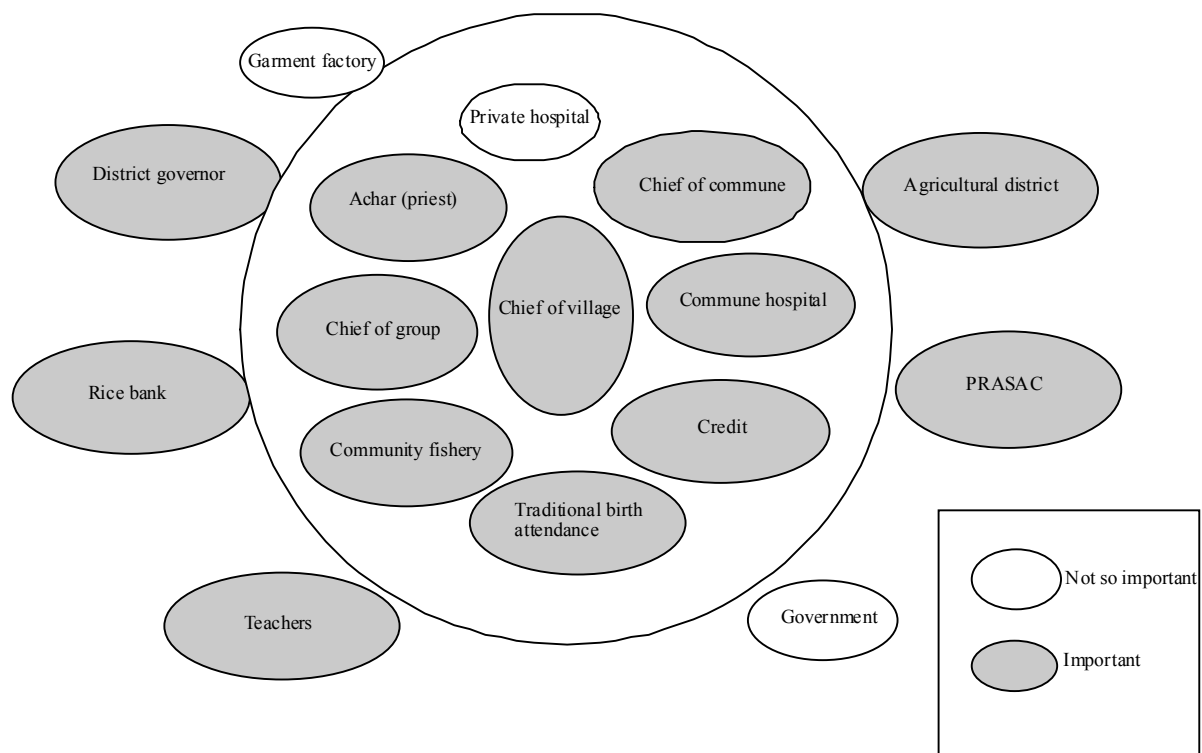


Figure 4: Women's Venn diagram

2.2.4 Social structure

Villagers adjacently build house in order to protect from strong wind during rainy season and help each other in case problem occur. It also shows the strong relationship among villagers. Buddhism is the sole religion villagers practice. There are two main committees: village committee and community fishery committee. Village committee is responsible for looking after general issues and solve any problems occur in the village. Community fishery committee is responsible for managing natural resources in the village.

People help each other such as poor people who do not have plowing machine or cutting grass machine, they can work for those who have this machine for 4 days and they will cut grass for free and sometime when machine does not work, they can repair for free.

To get insight into social communication the study team has separately interviewed men and women (see diagram...). They also use round paper which has difference size. Institution or person who is important use big size while smaller is less important. The distance from the center is showed the frequency of communication. In both diagrams show that they have close relationship with chief of village, Achar (layman who arranges a ceremony in a Buddhism monastery), commune council, commune hospital, traditional birth attendance, credit provider and community fishery. Each of these persons and institution has the following role and responsibilities:

- Chief of village helps in general activities in the village, especially communicate with district and provincial authority
- Achar have a key role in organizing any ceremonies in village

- There is no health care center in the village so they totally depend on traditional birth attendance when they have a baby, therefore both men and women consider birth attendance is important for them.
- Even though there is no NGOs or IOs provide credit in the village but they still think that it is important and close to them since they can borrow some money from PRASAC (this program funded by EU) which provide credit at near by village.
- Community fishery which has just established is important for them since in the past villagers always had conflict with fishing lot owner over using water from lake to irrigate dry season rice.

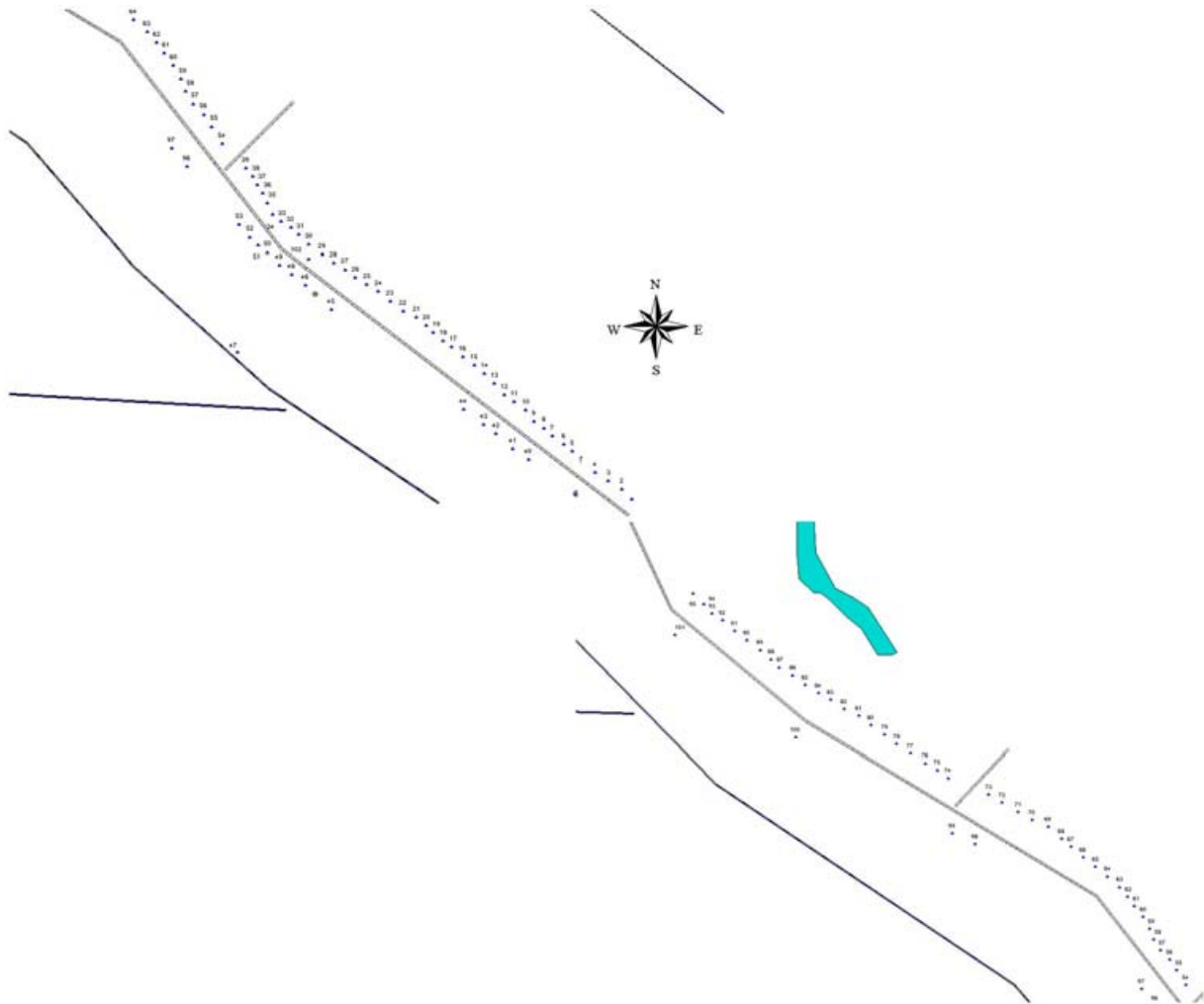


Figure 5: Social map of Koh Reusey village

Women's group think group chief is important since they do not have to contact directly with chief of village. They also point out some institutions or persons which seem to be far away from them and rarely come to their village such as district governor, agricultural district officer and government officer.

Men's group considers school is important to educate their children. In addition, they also reflect on middlemen, market and pagoda, while women's group did not mention as men can drive motorized boat to market.

2.2.5 Income source

The main income of villagers come from selling agriculture product such corn, bean, chilly, water melon, egg plant, vegetables and fish product. The main income of the very poor families comes from selling fish product rather than from agriculture product and they can earn 800,000 to 900,000 Riel per year (about US\$ 203-228). The poor families get income from selling agriculture product from 2-2.5 million Riel per year while the fair families get income from selling secondary crop and they rarely go fishing and they can earn 7-8 million Riel per year.

Very poor and poor families can work for other such as cut grass, cut trees, who can earn 3,500- 4,000 Riel/day. Those have grass cutting machine can earn 50,000- 60,000 Riel/day. During flooding season, they can remove trees, dragging along the rive and they can earn 2,000-3,000 Riel/day. Beside that they earn US\$ 20-40/month through working as garment workers at the garment factory. They also have other secondary occupation such as charge battery, repair boats and repair houses.

Even though villagers can earn a lot of money from selling agriculture product, they are still poor since in the last few years they have to spend a lot of money to buy pesticide. As amount of pesticide use increase, their health also deteriorates. So they need to spend more money on treatment. All these causes lead them to borrow money with high interest rate (10-15%/month) and can borrow only 300,000 Riel and the very poor families can not borrow money from other.

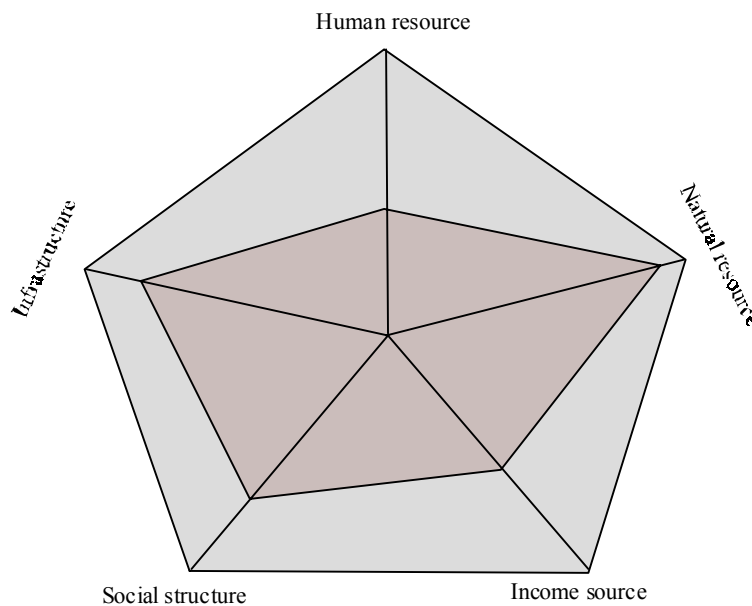


Figure 6: Five resources available in Koh Reusey village

2.3 Vulnerability

2.3.1 Farming and seasonality

SL study team asked villagers to put number of corn's seed in each month to represent the level of activities. They put 0 to 5 candies to represent no activities to the busiest activities. Both group (Men's group and women's group) selected lunar month calendar starting from the 10-11th month of lunar calendar (December and January). Both men and women are very busy in growing secondary crops such as mung bean, water melon, tobacco, chilly, egg plant, pumpkin and dry season rice etc...During this period they also go fishing since it is peak catch season and they process and sell fish for saving money to buy agriculture facility and materials.

January-February is the period of crop maintenance. Men spray insecticide while women clear grass. At this time they can harvest some crop (mainly cucumber) for selling.

March-May they can harvest other crop such as water melon, mung bean and chilly. If there is no pest destroys, chilly can be harvest until water flood.

Normally, villagers grow corn in April depend upon rain, if it rain early, they can grow early. If it rain late and water rise fast it may destroy corn. At this time villagers also busy with clearance of grass and small trees which grow on their field before water flood. In August-September villagers both men and women collect water hyacinth for using in receding season and at the same time they also collect firewood. From January to February villagers have to protect crops from pest destruction. They also involve in processing of agriculture product such as chop tobacco, dry chilly and corn. Villagers can earn money from selling fresh fish and smoke fish (from December to February) and other crops (from February to July). They spend most of their money from August to January.

Seasonal Calendar

Month	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Activities	hs	na	pl	rc	ba	es	ca	ra	ra	ca	na	na
Cultivate mung bean, water melon, wax gourd, cucumber, dry season rice, tomato, sesame	●●●●	●●●●	●●●●									●●●●
Tobacco, pumpkin	●●●●	●●●●	●●●●	●●●●	●●●●							
Chilly and egg plant	●●●●	●●●●	●●●●	●	●	●●●●	●●●●					
Corn					●●●●	●	●●●●					
Fishing, dry and process fish	●●●●	●●●●	●	●	●	●	●	●●●●	●●●●	●●●●	●●●●	●●●●
Dry chilly and tobacco				●	●●●●	●●●●						

Seasonal Calendar Conti...

Month	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
	សីហា	មករា	កុម្ភៈ	កក្កដា	សីហា	សីហា	សីហា	សីហា	សីហា	សីហា	សីហា	សីហា
Cut forest and clear grass						●●●●	●●●●					
Collect water hyacinth								●●●●	●●			
Collect firewood							●●●	●●●	●●●			
Make thath											●●●	

Seasonal Calendar Cont..

Month	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
	សីហា	មករា	កុម្ភៈ	កក្កដា	សីហា	សីហា	សីហា	សីហា	សីហា	សីហា	សីហា	សីហា
Water recede									●●	●●●●	●●●●	
Rain				●●	●●	●●●●	●●●●	●●●●	●●●●	●		
Pest destruction	●●●●	●●●●	●●	●●	●●	●●						
Expense	●●●●							●	●●	●●●●	●●●●	●●●●
Income from selling fish	●●●●	●●●●										●●●●
Income from selling agriculture products		●●	●●●●	●●	●●●●	●●●●	●●					

Figure 7: Seasonal calendar of villagers in Koh Reusey village

2.3.2 Trend line

- Population: In 1970 there were only 120 families in Koh Reusey village. In 1975 there were only 75 families. In 1980 there were no people occupy in the village since this village was taken over by Khmer Rouge and only few people go fishing and collecting

firewood over there. In 1982 there were 80 families who come from other places to settle in the village. Their security was threatened as Khmer Rouge still occupy in the area. Due to good solidarity and strong resist of villagers, Khmer Rouge's soldiers moved to other area. After 1990 number of families increased to 116. Number of families keep on increasing up to 135 families in 2002.

- Wild fish production decrease: wild fish production was considered at peak in 1979. However, this premium was not last for long it decreased subsequently as more and more pressure was put. In 1985 wild fish production was estimated decline 20%. From 2000-2002, wild fish decline drastically as more and modern fishing gears were used. In addition, illegal fishing gear such as electrocution and U-shape was introduced. Beside that there was military group support the offenders to do illegal fishing, however recent government policy reform on fishery sector has eliminated some indiscriminate illegal activities.
- River bank erosion: river bank erosion is because of speedboat. The rate of erosion was noticed in 1996 when the speedboat was introduced. The rate of erosion was huge in 1999 and until now.
- Pest destruction: 1985-1990 pest destruction was not serious. However from 1997 up to now pest destruction was serious as result villagers get low yield.
- Use of pesticide: 1985-1990 pesticide usage was low 5-15% compare to recently use.
- Crop yield: 1997-2000 all kind of crop's yield was low due to pest destruction. They realize the advantage of natural enemy (frog, snake bird). Nowadays crop's yield is increase a little bit due to use of high poisonous pesticide.
- Price of agricultural product: they can sell their agricultural product in high price in between 1985-1997 due to high domestic demand, good quality product and there was no imported agricultural product from other countries. However, in between 1997-2000 price of agricultural product was vastly decreased as low quality product, the imported product was huge and lower price than domestic product and local people do not like to consume domestic product.

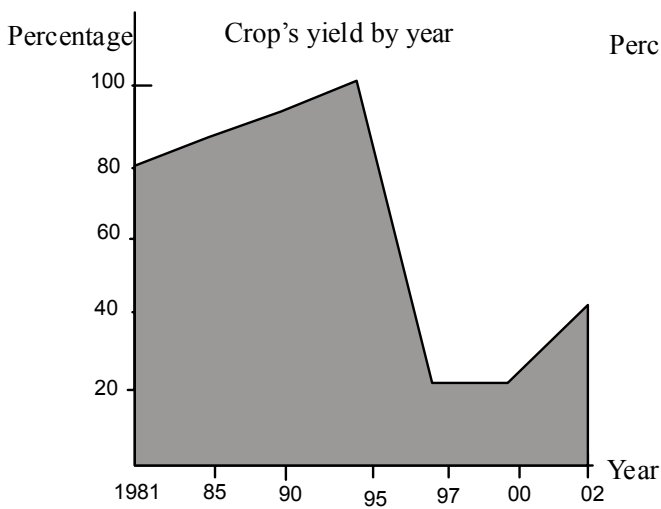
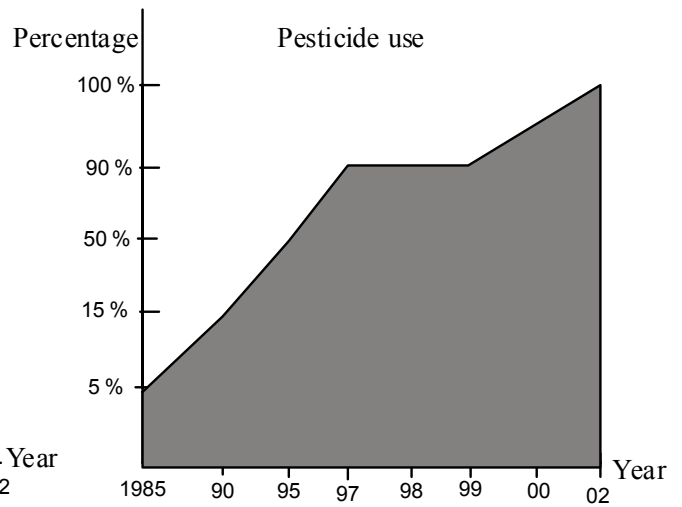
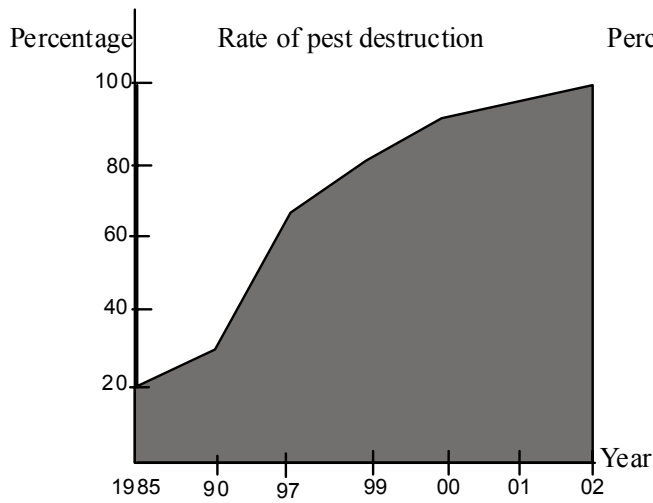
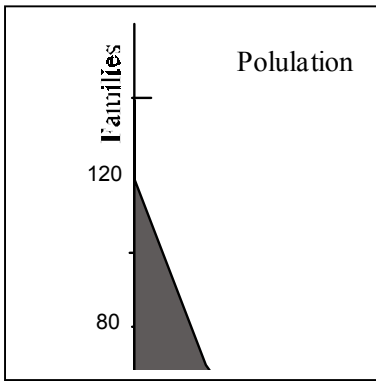


Figure 8: Trend line

2.4 Process and institution

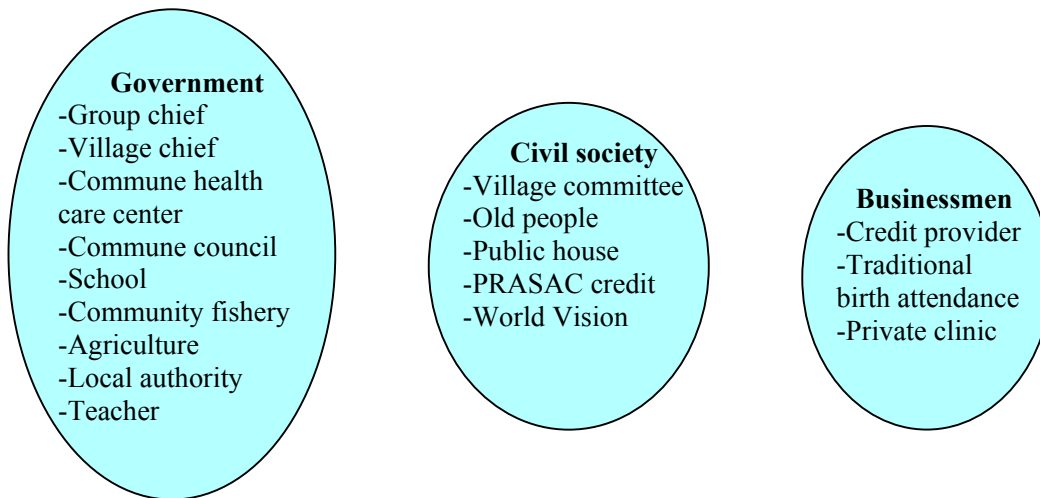


Table 3: Stakeholder analyses in Koh Reusey village

Institution		Positive	Neutral	Negative
Government	-Group chief	✓		
	-Village chief	✓		
	-Commune health care center	✓	✓	
	-Commune council	✓		
	-School	✓		
	-Community fishery	✓		
	-Agriculture			✓
	-Local authority		✓	
	-Teacher	✓		
Civil society	-Village committee	✓		
	-Old people	✓		
	-Public house	✓		
	-PRASAC credit	✓		
	-World Vision	✓		
Businessmen	-Credit provider			✓
	-Traditional birth attendance	✓		
	-Private clinic			✓

-Government

- Group chief is important. He/she inform the villager about the plan or other information comes from village level. He/she also solve any problems occur in the group.
- Village chief is responsible for solving problems and bring all request from villagers to commune level. He/she also responsible for communicating with outside institution.
- Commune health care center is responsible for educating people about health care.

- Chief of commune and district authority is responsible for intervening all problems occur in the village.
- School is the place to develop human resource
- Community fishery is responsible for managing natural resources in the village especially fishery resources.
- Agriculture district is considered an important institution which provide technology to villagers, however they never communicate with villagers.

- Civil society

- PRASAC is credit provider. There need to form the group and have mortgage in order to borrow money.
- World Vision provides rice seed to 8 families in the village with 15% interest rate within 3 months (in pilot stage).
- Village committee and old people are very important to advise and educate the villagers.

-Businessmen

- Traders provide credit, materials and buy agricultural product from them. However, they get high interest rate when villagers do not have money to pay the debt, they will confiscate the village's property.
- Traditional birth attendance is very important for villagers. She helps villager to give birth and advice.
- Private clinic help to treat villagers.

2.5 Livelihood strategy

Through livelihood study in Koh Reusey village the villagers grow crops and fishing. For very poor and poor families worked as laborer for wage such as collect firewood, cut grass and garment work. For those who have skill they work as boat repairer, battery charge person, black smith etc...

2.5.1 Problems faced and ranking

Even though they have occupations as mention above, they still can not support their families. They face a number of problems such as lack of seed, credit, fishing gear, water pumping machine, boat, health care center, teachers, knowledge, technique to grow crop, agriculture land. They also face other problems such as pest destruction, low price of agriculture product, many children, river bank erosion.

Method of problem ranking and analysis

- There were 47 villagers participated of who 28 are women
- Each villager was given 10 seeds of corn after that facilitator tell villager to rank the problems by putting 5 seeds is the most critical problem and put less if problem is less important.

Villagers rank the problems and make work plan to address it as follow:

- Credit
- Seed
- Boat
- Fishing gear

2.5.2 Problem analysis

There are two main problems which villagers want to address.

- Lack of credit is the main critical problem. The root of the problem is in the previous year they face natural disaster (pest destruction, too hot weather and rain at difference season) and there was no institution to provide credit for them as it is difficult to access to village and lack of communication with outsider. If they want to borrow money from businessmen there need to have mortgage. They need to work as laborer when they lack of food during rainy season. They have to borrow money from businessmen with high interest rate and all their product have to sell to businessmen. In case they do not have money to pay debt, properties (boat or agriculture land) would be confiscated.
- Lack of boat is the second critical problem and need to solve immediately. The root of the problem are:
 1. Lack of credit
 2. No capital since previous year, they face natural disaster (pest destruction and rain at difference season), low yield, low price of agriculture product and depletion of natural resources.
 3. There is not enough service on boat hiring since those who have boat, they need to use for themselves. (See figure)



Figure 9: Problem tree analysis

2.5.3 Action plan

After ranking and analyzing problems, villagers found 4 main problems which strongly relate to their livelihood. They are: lack of seed, lack of boat, lack of credit and fishing gear. Due to all the problems relate to credit (money), villagers address only credit issue to make the action plan.

Table 4: Action plan

Step	Initiative	Participant	Material	Problem	Timeframe
First step					
-Set up management committee	Villagers	Villagers	Books and pens	No problem	01/08/02
-Form group	Villagers	Group members	List, books and pens	-Once admitted, once dismissed -Get out of group -Want only member of family	01/08/02
-Create by-law, regulation and committee	Villagers	Villagers	Books and pens		07/08/02
-Create rule for group	Villagers	Group members	Books and pens	No problem	07/08/02
-Communicate with credit provider (NGOs or private)	Committee	Chief of group	-Document -Boat -Funding proposal -List of villagers -Agreement -Finger print	-Lack of money for transportation -Villagers angry -Meet them several times	15/08/02
Second step					
-Communicate with credit provider for second round	Committee	Chief of group	-Document -Boat	-No budget -Meet or not meet	20/08/02
-Communicate credit provider for third and fourth round					30/08/02
Third step					
-Accept money	Committee	Committee and chief of group	-Letter of accepting money	-Afraid of loosing	

Outcome of livelihood study

Analysis on intervention

Intervention proposed	Intervention and impact				
	Increase income	Increase welfare	Decrease vulnerability	Increase food security	Sustainable of natural resources use
Provide credit	✓	✓	✓	✓	

3. Conclusions

3.1 Conclusion

- Sustainable management of natural resources especially fishery resources can help very poor and poor people in the village.
- Community fishery committee has just established and it does not go smoothly yet since some villagers did not realize the benefit of community establishment.
- They grow crop or rice base on natural factors and the price of agriculture products was determined by businessmen.
- The use of pesticide is followed their ancestor not follow technical instruction, therefore it effects on crop's yield and their health.
- Homestead, crop fields and fish spawning area were destroyed by strong wave created by speed boat.
- Number of very poor people have increased subsequently.

3.2 Recommendation

According to the above action plan, credit is the major issue required an intervention from outside.

- Related institutions and agencies should negotiate with speed boat owners to speed down or changing of current technology use on speed boat to use skiing boat which produces smaller wave.
- Related institutions and NGOs should provide extension service on the usage of pesticide, inorganic fertilizer and growing plants.
- Government institution should pay attention on developing human resource at village level.
- Fishery institution should issue community fishery's by-law with participation from villagers to ensure the sustainable management natural resources.