



STREAM



A livelihoods study of farmers and fishers

in

**Saob Leu Village
Kratie Province**

Supported by STREAM Initiative
In cooperation with CFDO and SCALE

August 2002

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Acronyms

CFDO	Community Fisheries Development Office
DoF	Department of Fisheries
FCS	NGO working with Saob Leu villagers
FLD	Farmer Livelihood Development
HAGA	NGO working with Saob Leu villagers
NGO	Non-governmental Organization
SC/UK	Save the Children United Kingdom
SCALE	Cambodian NGO (now FLD)
STREAM	Support to Regional Aquatic Resources Management
UNICEF	United Nations Children's Fund
WFP	World Food Program

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The livelihoods study team included these staff:

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Note: Inconsistencies in English spellings of place names may be attributed to transliteration from Khmer.

EXECUTIVE SUMMARY

This is the report of a livelihoods study team working together with villagers from Saob Leu Village in Kratie Province, Cambodia. The study is based on information provided by the villagers, who shared their knowledge and spoke about the real problems they face with their livelihoods.

This study was conducted from 10–15 July 2002. The team worked with 15–30 villagers who volunteered to participate and represented the 177 households in the village.

In the village, there were differences in material ownership, means of production and standards of living. The villagers divided themselves into five wealth ranking groups: rich, medium, under medium, poor and very poor. The main resources in the village were then identified under five categories: human, natural, financial, infrastructure and social.

The villagers rely mainly on farming, with dry season rice being the most important crop. Most villagers are involved in small-scale fishing, with some having other skills. Before 2000, most villagers could make charcoal, and find timber and firewood to sell, but now these activities are illegal.

The main problems were identified as loss of land due to erosion, degradation of the forest and flooded forest, and the invasive spread of a new tree variety. Population growth has also put added demands on limited resources. Institutionally, the government, business people and civil society share a range of roles and have different impacts on the villagers.

The issues and problems discussed during the study in Saob Leu Village enabled the team to raise some considerations for the current situation and for the future. It was felt that the villagers worked well together with respected leaders, but they had some problems in dealing with the population growth. They were unsure how to expand their agricultural activities without this having a negative impact on the village's aquatic resources. The use by some villagers of large-scale fishing tackle and poaching made it harder for poor people to catch enough fish. A new tree species was also causing difficulties as it grows fast and spreads rapidly in

farming areas. A government directive on forestry use made those depending on the forest for income unemployed. This predominantly affected the poorest families in the village. Credit interests rates were felt to be too high and the infrastructure made access to and from the village difficult.

A number of recommendations were made for advice in family planning, establishment of a community fishing committee, a plan to build a bridge, a low interest credit scheme and increased knowledge of animal husbandry.

When the villagers had discussed their problems, with the study team's help they identified the most important problem and developed an action plan to address it. The villagers plan to build a bridge across Saob channel.

1. INTRODUCTION

1.1 Location

Kratie Province is in an upland area in the northeast of Cambodia. This province can be reached by boat and road. It is about 217 km from Phnom Penh city if traveling by boat along the Mekong River. Alternatively, the province can be reached by National Road Number 6A crossing the Kigona Bridge and continuing on by Road Number 7. At 341 km, this way is longer than by river. As the road is not developed, most people prefer traveling from Phnom Penh to Kratie by speedboat, which takes about six hours. The province has a total area of about 11,094 km² and the total population is 279,140, equivalent to 52,340 households (National Census 1998). There are eight minority groups living in Kratie: Cham, Phnong, Kouy, Samre, Steang, Mil, Kraol and Kaonh.

This upland province has plenty of forest and wildlife, while the Mekong River constitutes a major water supply. Along the river there are many channels and lakes, with a variety of aquatic resources. The deepest part of the river is a dolphin refuge. The dolphin is a rare animal, the symbol of the province and a tourist attraction. The province has a small area for agriculture stretching along the Mekong River and near the river are channels and lakes that were fishing lots. Now the system of managing fishing lots has been abolished and handed over to communities to manage and develop.

Kratie Province comprises five districts: Sambour, Preaek Prasab, Chhlong, Kratie and Snoul (Figure 1). The province borders Steung Treng and Ratanakiri Provinces to the north, Kampong Thom Province to the west, Kampong Cham Province to the south and Vietnam to the east.

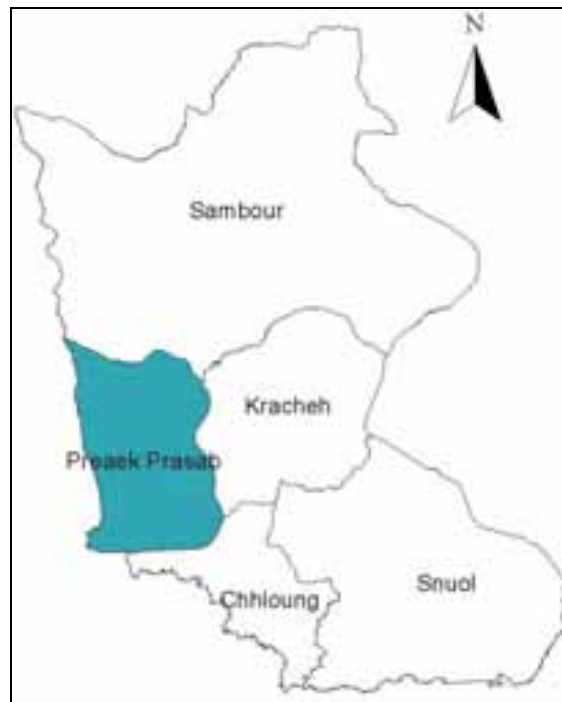


Figure 1 Map of Kratie Province

For the livelihoods study, the team selected Saob Leu Village in Saob Commune, Preaek Prasab District. Saob Leu Village is located next to Preaek Saob which is a former fishing lot, and borders Saob Krom Village on the south, Boeung Chreaeng on the north, forest on the west and the Mekong River on the east. The population of the village is 968, equivalent to 175 households. Most of the villagers rely on farming activities such as monsoon rice, dry season rice, secondary crops and fishing. Some households use natural resources such as timber and firewood and make charcoal. However, the government has now banned any activities related to forestry.

1.2 History of Saob Leu Village

Saob Leu Village borders the Mekong River on the west and is opposite Koh Trong. The village can be reached by boat from the centre of Kratie town.

The older men of around 60 years of age who have grown up in the village told a story of the village (Box 1). Table 1 provides a historical record of the village.

Box1 The story of Saob Leu Village

A long time ago before Issarak, this village was called Phum Chin because ethnic Chinese had migrated there to live. Later on most of the ethnic Chinese moved to live in Kratie town where they could make a better living. The name of the village changed to Saob Leu when an elite leader came who collected the villagers together to cut bamboo, vine and other materials from the forest to sell to the elite. All these products were taken via the channel to the river where they bound them into bundles (called *saob* in Khmer) and people then started to call the village after this activity. Later, the number of people in the village increased and, as the channel separated the village, they split the village into two and called it Saob Leu (Upper Saob) and Saob Krom (Lower Saob) depending on the water flow.

Table 1 Historical record of events in Saob Leu Village

During Issarak¹	There were 31 households in the village. The elite leader asked the villagers to cut bamboo, vine and timber to sell to the elite. Other than this work, the villagers farmed and fished as usual. At that time, the only means of transport was by rowing boats, ox-carts or by foot.
1963	The population had increased to 45 households. Most relied on forest products, farming, making charcoal and fishing. Some problems encountered were pests, monkeys, wild pigs, tigers and other wildlife destroying crops.
Pol Pot	In the Pol Pot regime, there were 61 households in the village. At that time, all villagers were forced to work hard and there was only one kitchen for all people to have food. They had to live in separate groups: men, women, children and teenagers. There was no religion, no school, no money and no relationships with each other. This was the way that Pol Pot governed the whole country.
1979	The village comprised 100 households who worked in collective groups (<i>Krom Samaky</i>). The pagoda, school and traditional celebrations recommenced. The villagers cooked their own meals and started using riel ² notes to buy goods.
1983	The <i>Krom Samaky</i> system was amended and the villagers started to have temporary land ownership. Their standards of living started to improve.
1983–1987	The Vietnamese brought trucks to barter for timbers and logs. Most villagers were cutting trees and making charcoal to sell.
2000	The government banned wood cutting. The villagers who used to make charcoal returned to farming work.
2001–2002	The government abolished the system of managing fishing lots. At the moment, the government is working towards strengthening the community to manage their own natural resources.

¹ Anti-French Khmer nationalists who fought for Cambodian independence from 1946–53.

² The riel is the Cambodian currency unit. There are about 4,000 riel/USD.

2. RESULTS

2.1 Wealth Ranking

Each household in Saob Leu Village has a different standard of living. The resources, skills and abilities that villagers use to earn their individual livelihoods are indicators for villagers to rank households in the village in different economic groups. The study team invited the old men, village and commune leaders and the village committee to conduct the wealth ranking activity, and discussed and decided how to rank the villagers in groups.

The village comprises 175 households. The villagers decided to 'wealth rank' the households into five groups so that a clear picture of each group could be given (Table 2). The groups are:

- Rich: 21 households, 12% of the total number of households
- Medium: 43 households, 24% of the total
- Under medium: 29 households, 16%
- Poor: 25 households, 14%
- Very poor: the largest group in the village, 59 households, 33% of total households

Rich

This group is made up of 21 households, 12% of the total number of households. They own enough land to produce food and are able to purchase more land. From this land, they can produce about 3–12 tons of rice per year. This rice is enough for family consumption and surplus to sell.

Most of the households in this group have adequate agricultural equipment and draft animals. They have boats, motorboats, motorbikes and bicycles, which makes transportation and communication easy for them. The houses are equipped with televisions, tape recorders and radios.

Table 2 Wealth ranking criteria of Saob Leu villagers

Criteria	Rich 12%	Medium 24%	Under medium 16%	Poor 14%	Very poor 33%
Farm land	1.5–3.5 ha	0.8–3.5 ha	1–2.5 ha	<0.5 ha	Have only household area
Rice production	3–12 tons	1.5–9 tons	1.5– 4.5 tons	Enough to pay debt	No
Food security	Surplus food to sell	Enough to eat and some surplus to sell	The majority have enough to eat, some shortage for a short period	Shortage of food about half of the year	Have enough food only in the harvest season
Means of transportation	Boat, motorboat, motorbike and bicycle	Boat, motorbike and bicycle	Boat and bicycle	Boat and bicycle	No
Home equipment	Television, tape recorder, sewing machine	Television, tape recorder, radio	Television, tape recorder and radio	Tape recorder and radio	No
Agricultural equipment	Plough, harrow, ox-cart and pumping machine	Plough, harrow, ox-cart and pumping machine	Plough and harrow	Plough and harrow	No
Fishing tackle	Trap, cast net, net	Trap, cast net, net	Trap, cast net, net	Trap, cast net, net	Trap, cast net, net
Credit	UNICEF interest rate 4%	Moneylender interest rate 15%	No	No	No
Livestock	Pigs up to 10; cows or buffaloes from 2–8	Pigs 2–5; cows or buffaloes 2–5	Pigs 1–2; cows or buffaloes 2–3	Pigs 0–1; cows or buffaloes 0–2	Have only chickens or ducks

Table 2 Wealth ranking criteria of Saob Leu villagers (continued)

Criteria	Rich 12%	Medium 24%	Under medium 16%	Poor 14%	Very poor 33%
Other income sources	Rice milling, wine making, pig slaughtering, running a grocery shop or telephone service, battery charging and fixing televisions	Rice milling, fishing, raising livestock, making wine, culturing fish in cages, running a grocery shop	Fishing and planting vegetables	Hawking, selling labor and fishing	Selling labor and fishing
Children's education	Study at university in Phnom Penh and other provinces	Study at high school in town until graduation	Study in village (secondary school)	Insufficient time and money to study properly	Insufficient time and money to study properly
Relationships	Have relatives overseas who send money	Relatives in Phnom Penh and children who work in factories can send money to help the family	Children who work in factories can send money to help the family	No	No
Health care	Able to send family members to provincial hospital immediately when sick	Access to good medical service	Commune health center	Commune health center	Commune health center

Besides farming activities, some households in this group have individual enterprises such as rice milling, wine making, pig slaughtering, operating a ferry, battery charging, telephone services and grocery shops, which bring in more income. As they have enough capital, they can access larger fishing tackle than other villagers. The households who own a rice mill can feed up to ten pigs by using rice bran and waste from the rice mill.

This group has access to a credit scheme which is provided by UNICEF. When this organization began to provide credit to the villagers, they started with all ranks of people, but later only members of the rich group were able to continue; the poor were unable to repay the debt and gave up of their own accord.

The children in this group can carry on to study at university in Phnom Penh with the support of family and relatives from overseas. When they are sick they generally have enough money to pay for medicine and send their family to hospital in Kratie Province or Phnom Penh.

Medium

This group is made up of 43 households, 24% of the total number of households in the village. They own about 0.8–3.5 ha of farmland, which enables them to produce from 1.5–9 tons of rice per year as well as other crops. This rice is enough for family consumption for the whole year and some families have surplus rice to sell.

For their farming activities, they have equipment such as a ploughs, harrows, ox-carts, pumping machines and they have enough draft animals. They have boats, motorbikes, bicycles and in particular, eight households among this group have a motorboat. This equipment enables them to have wider communication and transportation; it also allows them to use larger fishing tackle and access wider fishing areas. They have televisions, tape recorders, and radio equipment similar to the rich group.

In addition to the income from crops, most households have their own pigs, a few households culture fish in cages and some have individual enterprises

such as making wine, a grocery shop, television repair services, rice milling, and battery charging. In general they rear 2–5 pigs and 2–3 cattle.

The group is likely to borrow from business people when they need money, at an interest rate of 15%/month. Some households have children working in factories in Phnom Penh who can save money to send home, and some households are able to send their children to study at high school in the town. Additionally, if any member of the family is sick, there is enough money to send them to hospital in town.

Under medium

This group is made up of 29 households, 16% of households in the village. They have about 0.5–1 ha of farmland, most of which is inherited from family. With this land, they produce about 1.5–4.5 tons of rice per year, which is enough to eat for a whole year. A few households have a shortage of rice for a short period.

For farming, they mostly have only ploughs and harrows, with some households having an ox-cart and two cows for draft purposes. Most households have a bicycle and a small boat which they can use in the lake. There are only three households that have motorboats, although in their houses the people in this group have televisions, tape recorders and radios.

This group has no other job besides farming, unlike the two groups above. They use small-scale fishing tackle that does not catch enough to support the family. Some households in this group have children working in factories in Phnom Penh who save money to help the family. Most children finish their studies at secondary school level, which is available in the village. They rely on the health center when a member of the family is sick because they do not have enough money to send them to the hospital in town.

Poor

This group is made up of 25 households, 14% of the village households. Most have no farmland, only homestead area. Some households have about 0.5 ha of farmland and some access to farmland by renting it from their

neighbors. For this, they have to pay rent, leading to a shortage of rice for about half of the year.

For farming, they have ploughs, harrows and two cows for draft purposes. In their houses, they may have a tape recorder and radio but not all households own these. For transportation they have small boats, bicycles, and one household has a motorboat.

Some households in this group have no permanent occupation. Sometimes they fish or hawk goods and spend most of their time selling their labor. They own small livestock such as chickens and ducks. A few households have one pig, or they raise one or two cows, with which they cooperate with neighbors. The children do not have enough time to study as they need to help their family earn enough income. They rely mainly on the commune health center when sick.

Very poor

This group is made up of 59 households, at 33% the largest group in the village. Almost all households in this group have no farmland. They rely totally on selling labor and fishing to survive. They have no money to buy large fishing gear or motorboats so they use small-scale fishing gear and cannot catch enough fish to eat and sell.

This group has no cows or pigs, only chickens and ducks. When they are sick they rely on the commune health center because they have no money to spend on the hospital in town.

Two years ago, most households in this group relied on working in the forest: cutting timber, and making charcoal and firewood. Now that the government prohibits these activities, the group has no trade and faces resource shortages when they return to farming work. This group is the most vulnerable.

Figure 2 indicates the locations of the various types of houses in Dang Tong Village.

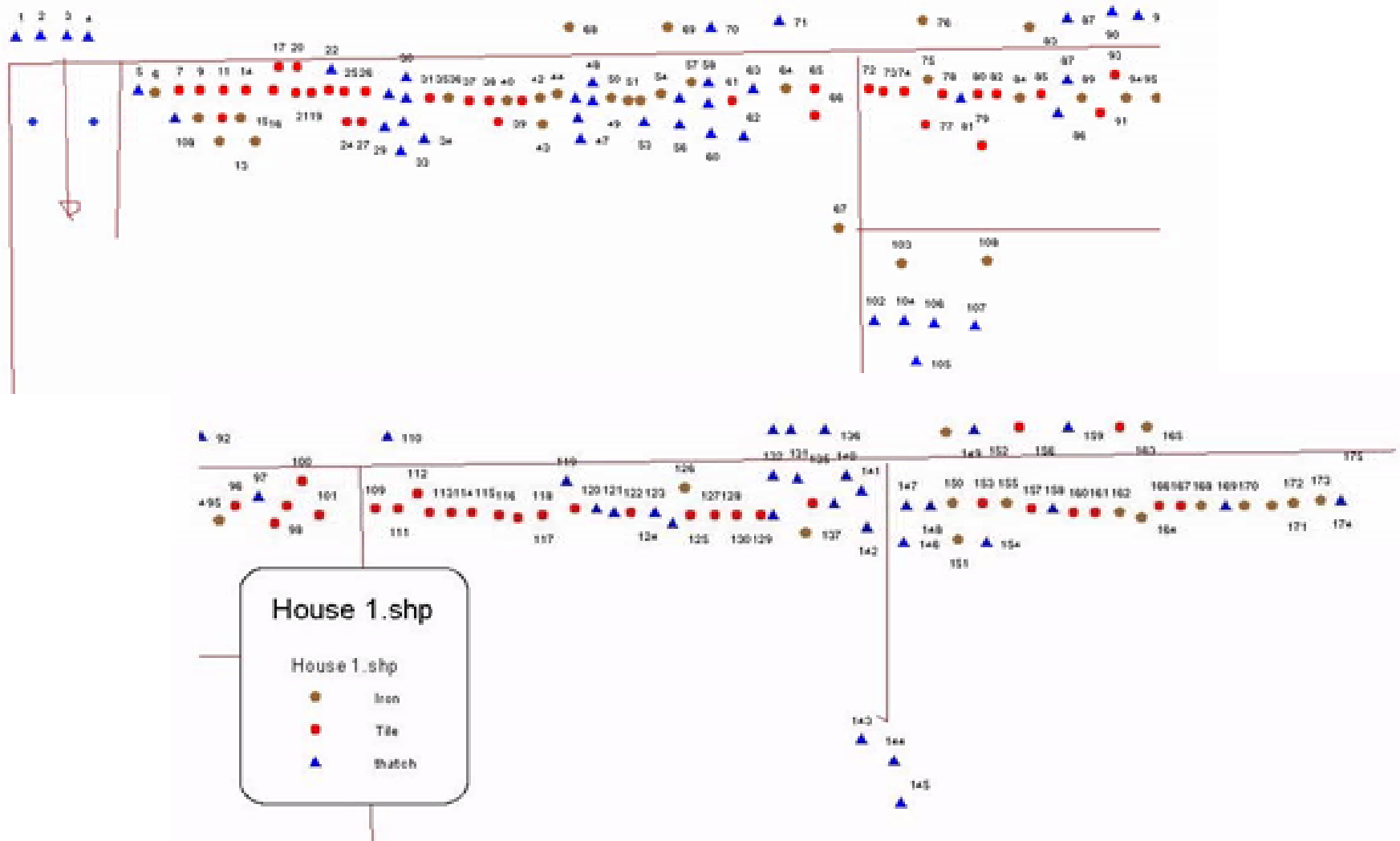


Figure 2 Social map of Saob Leu Village according to house type

2.2 Resources

2.2.1 Human resources

In general, villagers are skilled in farming such crops as monsoon rice, dry season rice, secondary crops, and also in fishing, hunting and using other resources from the forest. Besides farming, they can do handicrafts such as basket-making, thatch-weaving and making traditional fishing tackle. They have inherited these skills from previous generations.

The village is led and organized by village leaders, commune leaders, a pagoda committee, a dam committee, a people's consultancy and monks. These people are actively involved in developing the village, so far managing to build a bridge and road and to fix dams.

The village nurse, traditional midwife, and a traditional healer are people who play an important role in providing health care to villagers. Some villagers have specific skills that they can use to generate more income for individual households, such as carpentry, growing fish in cages, making local wine, making palm juice, tailoring and pig slaughtering, and two people are skilled in deep-water diving.

Most villagers are literate and in general the village children have the chance to complete secondary school, which is available in the village. The children in rich households are able to carry on their study to high school and university.

2.2.2 Physical resources

There is a loose surface road through the village near the riverside that connects Saob Leu to other villages. The river current is eroding the road so villagers plan to build another road next to it. However, these roads which connect to neighboring villages are only comfortable to travel on in the dry season. There is a ferry to Kratie town, which does two trips per day. On the channel that separates Saob Leu and Saob Krom Villages there is a small ferry.

In the farming system, the village has one dam called Traseak Chrum, which is the source of water for irrigating dry season rice. This dam was constructed with the involvement of villagers.

There are five grocery shops in the village. As the village is far from the market, people prefer to do their shopping in the village. Also the village has other services such as two water supplies, one telephone service, one rice mill and one battery charger.

It is easy for children to go to school as they have access to primary and secondary schools. The primary school has eight classrooms, which means it can accommodate 364 students. The secondary school has 15 classrooms and currently has 287 students.

2.2.3 Natural resources

Natural resources play an important role in supporting the livelihoods of the villagers. A wide range of natural resources is available in the village, such as a river, channels, lakes, agricultural land, forest and inundated forest (Figure 3). The river, channels and lakes have plenty of fish, especially the former fishing lot channel. In addition, the river is the source of silt from the uplands which is spread on agricultural land to enrich it. In the inundated area next to the village is a forest where villagers say that fish spawn and rest. However, this area has declined because villagers have used it to expand the dry season rice areas.

The total agricultural land of the village is about 184 ha: 50% of this is for dry season rice and the rest is for secondary crops and monsoon rice, as estimated from data in the digital map in Figure 4. In this area, villagers can expand farming by clearing forest in the upland area about 5 km from their village. The forest is where villagers extract a wide range of resources such as firewood, timber, vines, thatch, tree resin and many kinds of wild animals and birds.

It is problematic, however, that the natural resources of the village are being degraded by exploitation, especially the forest and fish. Recently the government has issued a directive banning the harvesting of forest trees and has reformed the fisheries law to protect the natural resources.

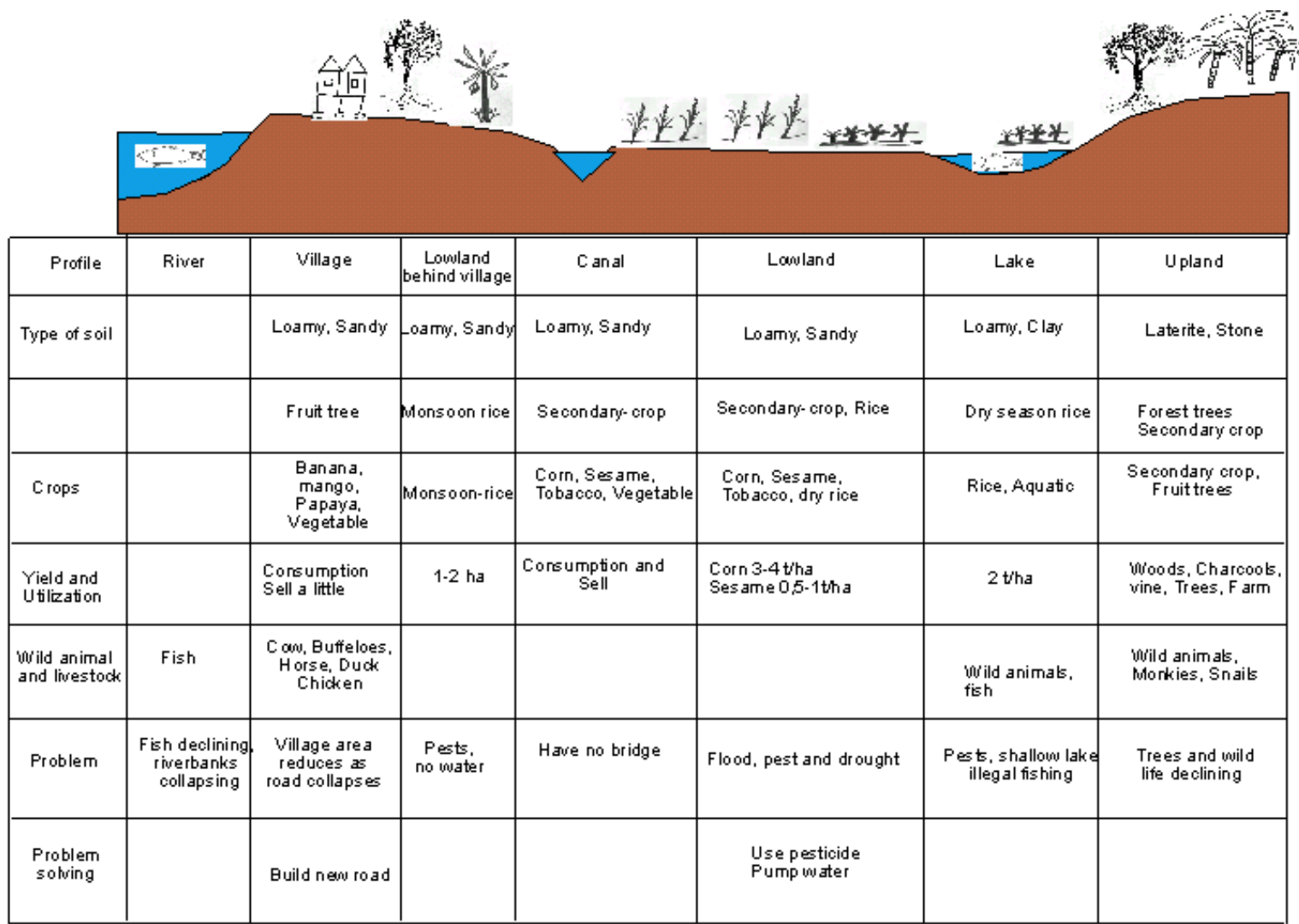


Figure 3 Topographical transect of Saob Leu Village



Figure 4 Land use map of Saob Leu Village

2.2.4 Social resources

Villagers have good relationships with each other. They are willing to help each other on special occasions such as celebrations, building houses, new house entry ceremonies, weddings, when there are births or in times of sickness.

The village leaders, commune leaders and old men in the village are respected and reliable; they play an important role in organizing and managing the village. They have arranged to raise money and have brought villagers together to fix the dam and water gate, and build a road, bridge, school and pagoda. The villagers are Buddhists so the old men who follow Buddhism also play an important role in leading the community.

To learn more about the relationships between the village and other people and institutions, villagers were asked to construct Venn diagrams. For this activity, the men and the women worked separately. The study team asked them to make the Venn diagram by using paper circles to represent people and institutions related to the villagers. The size of circle represented the importance of the individual or institution and the distance from the center represented the proximity of the relationship. The biggest circle represents people that are considered to be the most important to their livelihoods. The closer in proximity to the center, the more familiar the villagers are with them.

The two Venn diagrams (Figures 5 and 6) show that there are both similarities and differences in the way the men's and women's groups perceive other people and institutions.

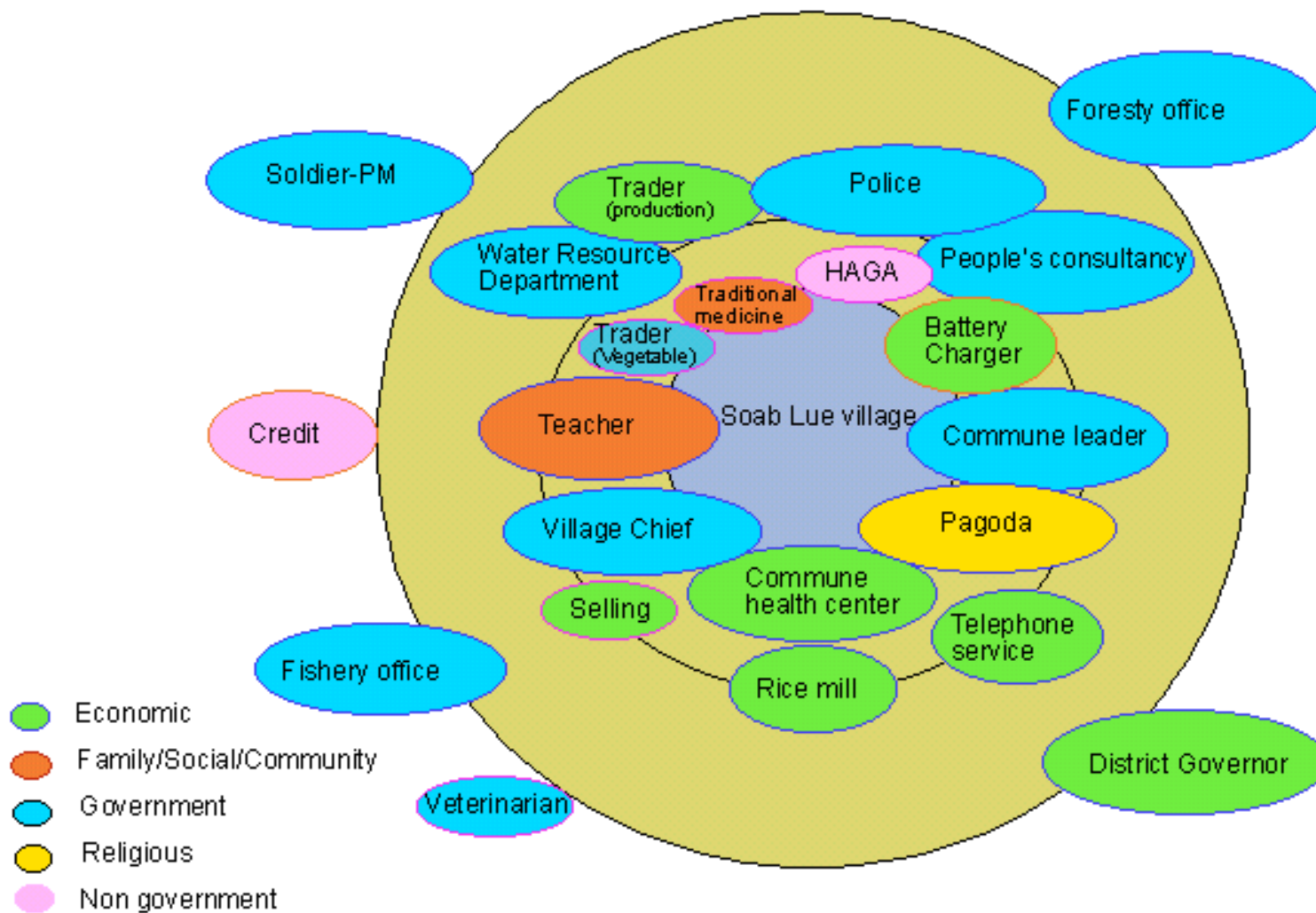


Figure 5 Venn diagram for the men's group

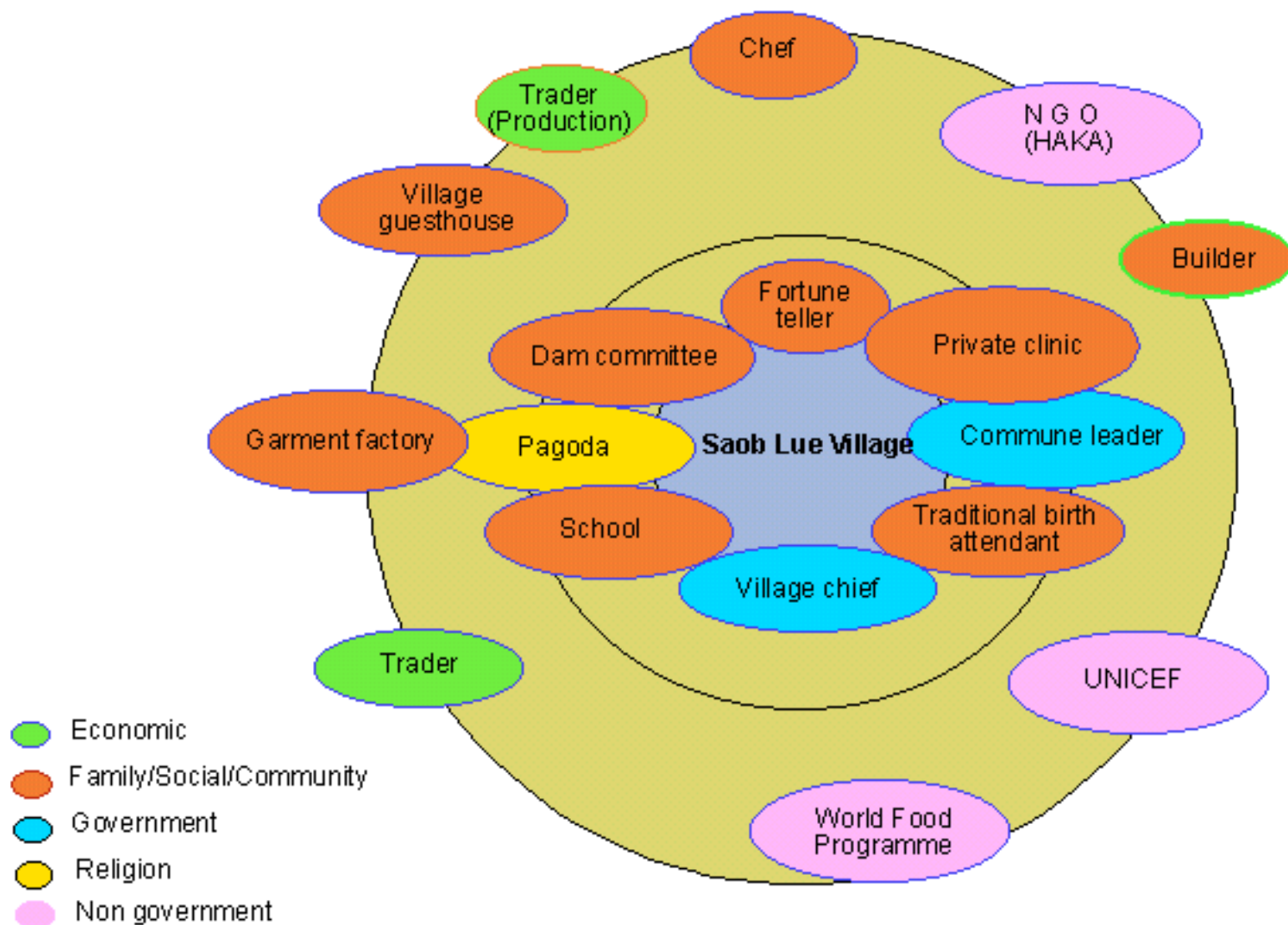


Figure 6 Venn diagram for the women's group

Most important people and institutions

Both groups considered the village and commune leaders, teachers, school and pagoda as important and had close relationships with them. These are the people who manage and lead the villagers in any activities related to their current livelihoods. The school is where children study and the pagoda is where villagers pray and raise funds to develop their village.

One of the main differences was that while the men thought the commune nurse was more important, the women thought the traditional midwife, private nurse and dam committee were more important. The women said that, as these people live in the village with them, they are easy to contact when needed.

A number of people and institutions were also considered important but they had poor relationships with villagers. These included the police, the Department of Water Resources and the Provincial Fisheries Office. The police are security guards, the Department of Water Resources helps villagers to fix the dam to store water for dry season rice and the Fisheries Office helps preserve natural fish resources and control illegal fishing in the area. However, these people do not often visit the village.

The women had an interest in the garment factory and the village meeting house (*sala bon*) and they also considered organizations such as HAGA, UNICEF and WFP important. The garment factory employs their children and the other organizations provide credit, food for work and water filters. However, there were few people working in the factory because it is too far from the village unless they have relatives in Phnom Penh.

Medium important people and institutions

The women's group also expressed an interest in the bridge and road committee and said that neighboring villagers were important to them. These people play an important role in soliciting funds and bringing villagers together to build a road and bridge, without which transportation is difficult.

The men's group considered the battery chargers important because most villagers use batteries to light their houses and for televisions.

Both men and women thought that the middlemen who buy agricultural produce from the villagers were quite important. They come to buy mung bean, sesame and other produce at the village, so villagers do not have to worry about cost or means of transport to the market. The rice mill and telephone service were also considered of medium importance.

Less important people and institutions

There was a group of people and institutions to which villagers allocated the smallest circle and who were placed far from the village. These included private credit supply, the forestry office, the district veterinary and big businesses. These people come to visit the village but they never help or do anything useful for the villagers.

2.2.5 Financial resources

In general, villagers generate income through selling agricultural produce: rice, tobacco, corn, sesame, vegetables and natural fish products. Most households from the rich and medium groups are able to catch enough fish to sell and some households in these groups are able to grow gigantic snakehead fish in cages. This fish species is more expensive at the market and they need to invest a large amount of capital for feeding them. Other than these sources of income, villagers manage to generate income through selling livestock such as cows, water buffaloes, chickens and ducks. Some households generate income through individual skills and occupations such as making furniture, owning and operating a rice mill, a grocery shop and tailoring.

The poor and poorest groups generate income through selling labor, for which they earn 3,000–3,500 riel/day. The way that these groups generate income is difficult and less profitable: they lack materials to extract natural resources, especially fish, because they have no money to buy fishing gear.

Some families have children working in the garment factory who can save money to help their families.

2.2.6 Summary of village resources

Table 3 and Figure 7 summarize the resources available to Saob Leu villagers.

Table 3 Main resources available in Saob Leu Village

Resources	Details
Human	A village leader, a commune leader, a dam committee, a people's consultancy, six teachers, two policemen, two soldiers, four village healers, two village nurses, a traditional midwife; one carpenter, ten palm juice makers, two deep-water divers, four chefs, a pig slaughterer, a fortune teller, two tailors and some people who grow fish in cages
Physical	A telephone service, two lanes of loose surface road, a primary school and secondary school, a pagoda, six grocery shops, four rice mills, a dam with two canals, two ferries, two water supplies, two battery chargers, a television repairer and a motorbike repairer
Natural	The Mekong River, the Saob channel, forest, inundated forest, agricultural land, aquatic resources, wildlife, lakes
Social	The Buddhist religion; respect for elders; a tradition of helping each other; willingness to work in groups; trust in the elders, elder Buddhists and monks
Financial	Selling agricultural produce and livestock; access to credit from UNICEF; working at the garment factory; selling labor, handicrafts and fish

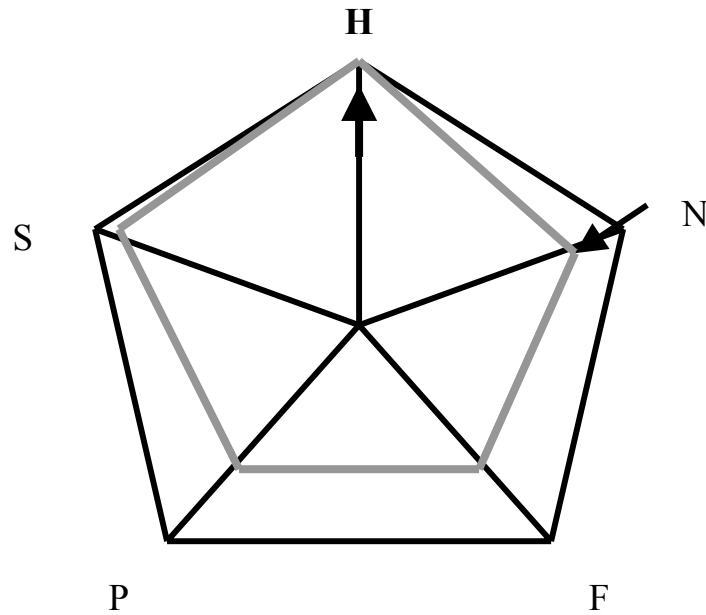


Figure 7 Summary of the five types of resource in Saob Leu Village

The five resource types shown in the diagram in Figure 7 can be explained as:

- Human resources (H) are being developed. The children in the village have access to primary and secondary schools and the villagers are likely to adopt new knowledge from outsiders.
- Natural resources (N) are being degraded, especially the forest and fish. Due to population growth, villagers need to consume more fish and expand the production areas that are available in the forest. In particular, the inundated forest has nearly disappeared.
- For financial resources (F), the villagers rely mainly on agricultural production and developing natural resources such as fishing and forestry. When the natural resources are degraded, the income of the villagers declines as a result.
- In terms of physical resources (P), although there is a school in the village for the children to study at and a pagoda for religious ceremonies, the villagers face communication problems. They have to travel by boat to Kratie town, which is costly, slow and difficult for women and children.
- For social resources (S) the villagers have good relationships. They are willing to work together and contribute to build bridges and

roads. The villagers respect the village and commune leaders, who have influence with outsiders to encourage them to work in the village. However, there are no obvious relationships with the district governor and provincial offices.

2.3 Vulnerabilities

2.3.1 Farming and seasonality

Farming, social activities and other fluctuations during the year were represented in seasonal calendars developed by men and women separately (Figures 8 and 9). The team asked the villagers to score the activities by using corn grains to represent the amount of work that needs to be done in any given month. The busiest times scored 5 corn grains, the next busiest 4–3, the least busy 2–1 and periods of no activity were left free. Both groups used the lunar calendar, which is the common calendar in rural areas.

As indicated in the seasonal calendars, farming activities continue all year round. Some activities involve both men and women while some do not. Men are responsible for land cultivation for the monsoon rice, which starts in May, but both men and women are responsible for sowing and transplanting starting in July and then looking after the crop until harvesting. While the women are transplanting and looking after the monsoon rice, the men start to plough dry season rice. They plough the dry rice area before it is flooded. As with monsoon rice, the women are not involved at this time but they are responsible for sowing, transplanting, and then carrying on the harvest.

The men are responsible for ploughing and harvesting secondary crops such as tobacco, sesame, corn and mung bean. Women do the planting and look after the crop until harvesting. In addition to planting rice and secondary crops, the men are involved in fishing and finding firewood. The calendars show that villagers can fish all year round, but between November and January they catch the most fish. Women are not involved much in fishing but they are involved in processing and selling fish. Women also have extra work in handicrafts like making baskets, thatch weaving and selling labor. Both men and women have indicated that the time they need to borrow money is between July and November, the flooding season.

Activities	ဒီဇင်ဘာ Dec/Jan	ဇန်နဝါရီ Jan/Feb	ဖေဖော်ဝါရီ Feb/Mar	မတ်လ Mar/Apr	ဧပြီ Apr/May	မေလ May/June	ဇွန်လ June/July	ဇူလိုင်လ July/Aug	ဇူလိုင်လ Aug/Sep	စက်တင်ဘာ Sep/Oct	အောက်တိုဘာ Oct/Nov	နိုဝင်ဘာ Nov/Dec
Weather	Rain			Hot and dry								Rain
Monsoon rice					🌱🌱🌱	🌱🌱	🌱🌱🌱	🌱🌱				🌱🌱🌱
Dry rice				🌱🌱			🌱🌱	🌱🌱		🌱🌱	🌱🌱	🌱🌱
Tobacco					🌱🌱						🌱🌱	🌱🌱
Sesame				🌱🌱				🌱🌱				
Vegetable	🌱🌱	🌱🌱	🌱🌱	🌱🌱	🌱🌱	🌱🌱	🌱🌱		🌱🌱	🌱🌱	🌱🌱	🌱🌱
Collect firewood				🌳🌳	🌳🌳			🌳🌳	🌳🌳			
Fishing	🐟🐟	🐟🐟	🐟🐟	🐟🐟	🐟🐟	🐟🐟	🐟🐟	🐟🐟	🐟🐟	🐟🐟	🐟🐟	🐟🐟
Sell labour	👤👤	👤👤				👤👤	👤👤	👤👤				👤👤
River flood	🌊							🌊🌊	🌊🌊	🌊🌊	🌊	🌊
Human disease						👤👤	👤👤	👤👤	👤👤	👤👤	👤👤	
Animal disease				🐄🐄	🐄🐄	🐄🐄	🐄🐄	🐄🐄				
Shortfall of food								🍌🍌	🍌🍌	🍌🍌	🍌🍌	
Use of chemical fertilizer	🌱🌱	🌱🌱	🌱🌱	🌱🌱	🌱🌱	🌱🌱	🌱🌱	🌱🌱	🌱🌱	🌱🌱	🌱🌱	🌱🌱
Need of credit			💰	💰	💰	💰	💰	💰	💰	💰	💰	💰
Wedding	👰	👰	👰							👰	👰	👰

Figure 8 Seasonal calendar of men's activities in Saob Leu Village

Activities	เมษายน Apr/May	พฤษภาคม May/Jun	มิถุนายน Jun/Jul	กรกฎาคม Jul/Aug	สิงหาคม Aug/Sep	กันยายน Sep/Oct	ตุลาคม Oct/Nov	พฤศจิกายน Nov/Dec	ธันวาคม Dec/Jan	มกราคม Jan/Feb	กุมภาพันธ์ Feb/Mar	มีนาคม Mar/Apr
Weather	Rain				Cool					Hot		
Monsoon rice			●●	●●●●	●●●●	●●	●	●●●●	●●	●●●●	●	●
Sesame	●●●●	●●●●	●●	●●●●								
Dry rice					●●	●●●●	●●●●	●●●●	●	●●●●	●●●●	●●●●
Tobacco Ground nut						●●	●●●●	●●●●	●●●●	●	●	
Com							●●●●	●●	●	●	●	●●●●
Water melon Cucumber								●●●●		●	●	●●●●
Mung bean						●●	●	●	●	●●●●		
Making basket	●	●	●	●	●	●	●	●	●	●	●	●
Sell labour to transplant rice				●●	●	●	●	●				
Collecting thatch									●	●	●	●
Wedding	●	●●●●						●●●●	●●●●	●●	●	●●●●
Ceremony	●●●●	●●●●		●●●●	●●●●	●●●●	●●●●	●●●●		●●●●	●●●●	●●●●

Figure 9 Seasonal calendar of women's activities in Saob Leu Village

Activities	កើត Apr/May	រីករាលដាល May/Jun	រីករាលដាល Jun/Jul	រីករាលដាល Jul/Aug	ផ្តល់ផល Aug/Sep	ផ្តល់ផល Sep/Oct	ផ្តល់ផល Oct/Nov	ផ្តល់ផល Nov/Dec	ផ្តល់ផល Dec/Jan	ផ្តល់ផល Jan/Feb	ផ្តល់ផល Feb/Mar	ផ្តល់ផល Mar/Apr
Weather		រដូវវស្សា			រដូវប្រាំង			រដូវប្រាំង			រដូវវស្សា	
Sell sesame												
Sell vegetable												
Need credit or borrow money												
Sickness												
Shortfall of food												
Animal disease												
Garment factory work												
Sell fish												
Fish processing Prahok Phok												
Clearing bush or tree from the paddy												

Figure 9 Seasonal calendar of women's activities in Saob Leu Village (continued)

2.3.2 Trend line

Villagers noted ten main trends in their livelihoods (Figure 10).

Population growth

Villagers remembered that there were not many households in the village from 1970–79 since at that time there was fighting and the country was ruled by the Khmer Rouge. Since 1979 the number of households has grown gradually. The village is currently made up of 175 households, comprising 968 people. The population has grown rapidly since 1990 because the fighting ceased, there is no birth spacing service or intervention on family planning available and people migrated from other villages.

The constant growth of population is increasing the need for resources. The villagers recognize that it is difficult when the population continues growing and the agriculture land is limited.

Number of farming households

An increasing number of households are planting monsoon rice, dry season rice and secondary crops. As the population is constantly growing, the need to expand agricultural area is continuing. Although at the moment there is no space for expanding the monsoon rice and dry season rice areas, villagers can expand the farming areas in the uplands about 5 km from the village.

The number of households that plant secondary crops, monsoon rice or dry season rice varies depends on the weather and the market price. Now most villagers like to plant dry rice because there is little damage from pests and no problems with drought or flood. They can plant dry season rice on the monsoon rice areas, if the monsoon rice floods or is fruitless. The number of households involved in planting crops is related to the banning of tree cutting.

School and pagoda

The school and pagoda have been well developed. From 1970–75 there was no school, so children studied at the pagoda. Then from 1975–79, when the

Khmer Rouge ruled the country, there were no schools or pagodas. Since 1980 when schools and pagodas were reopened, there has been a primary school and secondary school in the village.

Making charcoal

Cutting trees to make charcoal is historically a common activity in the village. Due to high market demand and availability of transportation, the activities of making charcoal in the village increased from 1990–2000. Villagers said that in this period almost every household was involved in making charcoal. Villagers stopped making charcoal in 2000 when the government issued directives to ban any activities related to cutting trees.

Collapsing riverbanks

Every year the riverbanks collapse due to the river currents. Villagers who settle near the riverside have to move further away. The old men in village report that when they were young the road was moved and now they plan to move it again. The new road is located about 100 m from the river. This is a natural problem for which the village has no solution.

Disappearance of forest

Villagers recognize that this area has a lot of forest with plenty of trees. The forest has declined gradually with the demands of humans but it declined drastically from 1982 to 2000. In this period, most villagers cut small trees to make charcoal and big trees for timber. In addition, Vietnamese traders came to trade timber in the village. Some villagers had sawing machines to process timber. The government took strong action to ban the exploitation of forest resources in 2000, so villagers who used to work in the forest turned to working on farms instead.

Disappearance of wildlife

The disappearance of wildlife happened simultaneously with the disappearance of the forest. The forest is a refuge for wildlife, so when the

trees are cut down the hunting is also affected. Before 1970 villagers used to see tigers but now they see only wild pigs, rabbits and snakes.

Disappearance of inundated forest

In between the river and forest is a lowland area where inundated forest used to be. This forest was recognized as a fish refuge and spawning area. Only a small part of this forest remains along the dam and canal because the villagers have cleared it to plant dry season rice. They had been clearing the forest to expand the dry season rice area since 1970.

Decline of natural fish stocks

Natural fish stocks have also been on the decline. Villagers said that there were plenty of fish during the period of war between capitalism and communism from 1970–79, at which time no modern fishing tackle was used, there were fewer fishermen and there was no exportation of fish produce. Fish started to decline gradually from 1979 because of the disappearance of inundated forest and the use of illegal fishing methods such as throwing grenades, using electric shock and the availability of big fishing tackle. The population growth has also had an impact on the size of fish stocks.

Appearance of invasive tree species

When the inundated forest disappeared, another tree species emerged, which the villagers call *bunla youm*. This tree species started to grow in the village in 1999. The villagers said it seriously interfered with their crops. It is resistant to drought, and grows and spreads quickly. The tree seed can still grow even if the villagers cut and burn it. This tree not only interferes with the crop, it also smothers other trees. Some agricultural land was abandoned because it cannot be cleared.

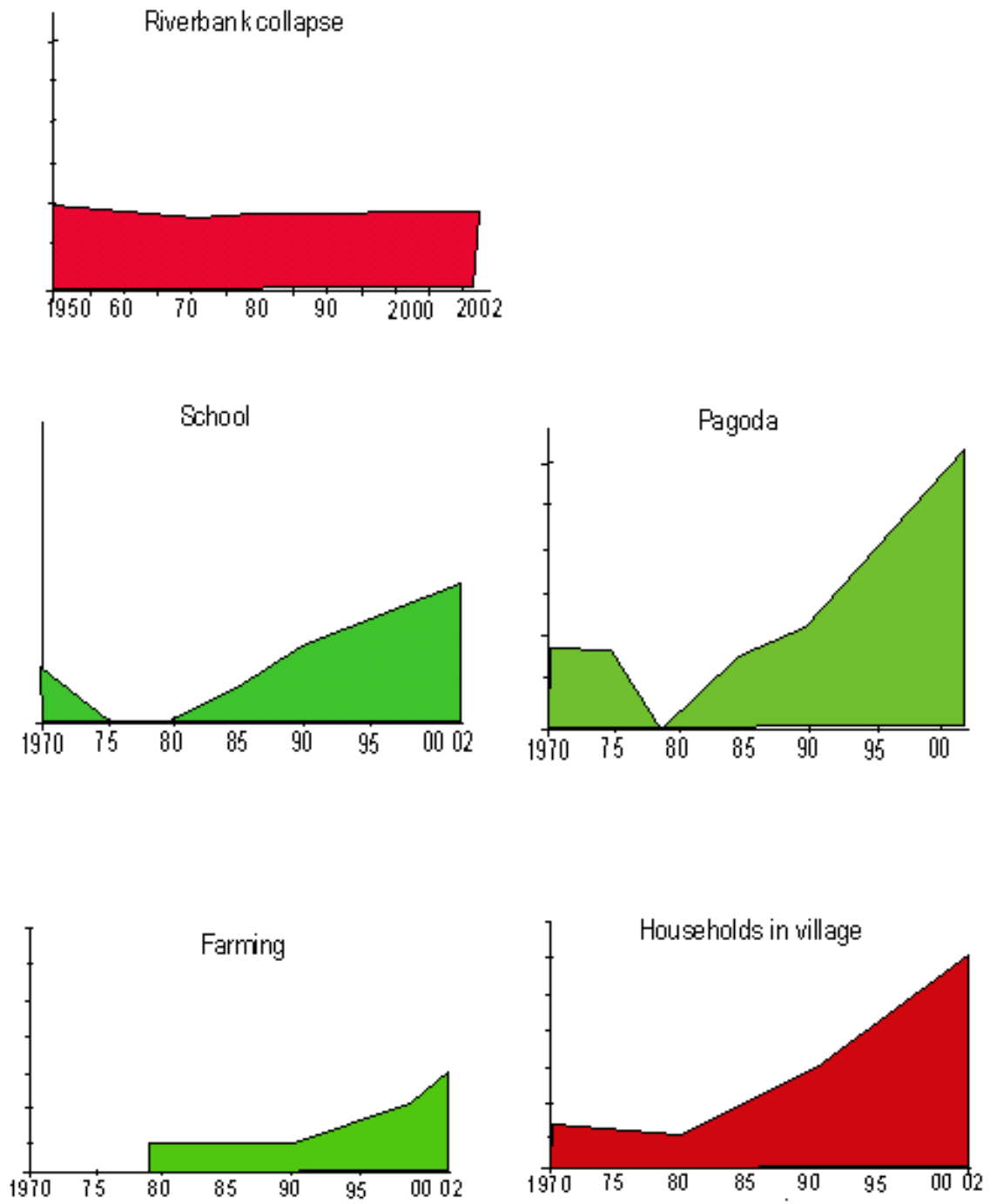


Figure 10 Trend lines in Saob Leu Village livelihoods

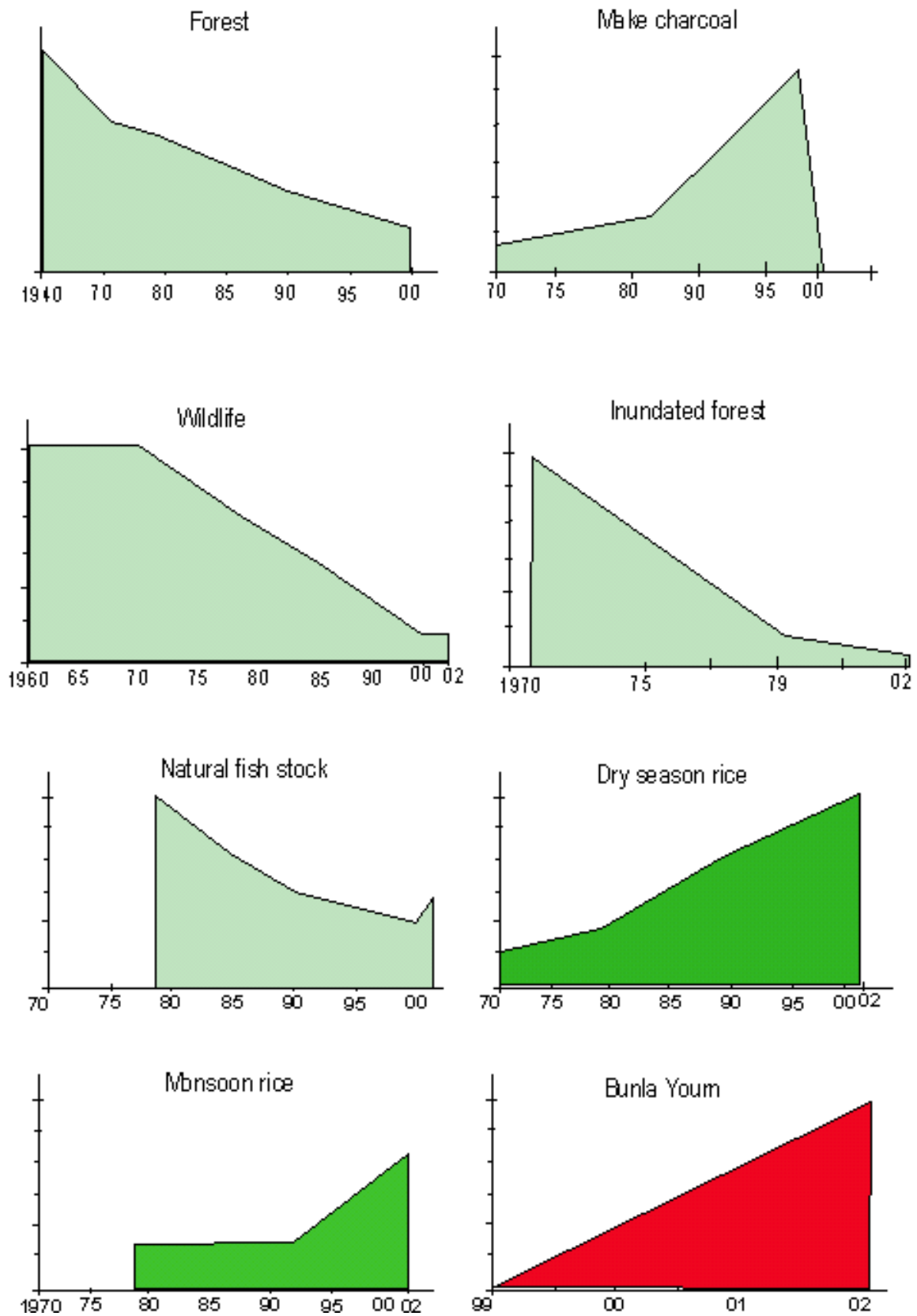


Figure 10 Trend lines in Saob Leu Village livelihoods (continued)

2.4 Institutions and processes

2.4.1 Institutions

The Venn diagrams (Figures 5 and 6) showed that three main groups of institutions were relevant to villagers: government, business and civil society (Table 4). The three groups have different impacts on the livelihoods of villagers (Table 5).

Table 4 Institutions related to Saob Leu villager livelihoods

Government	Business	Civil society
Village leader	Middlemen	FCS
Commune leader	Moneylenders	HAGA
District governor	Shopkeepers	SC/UK
School	Hawkers	UNICEF
Forestry office		WFP
Fisheries office		Pagoda committee
Department of Water Resources		
Commune health center		
Police and military		
Veterinary		

Government

The people from the government had the most relevant role for villagers. The village leader, commune leader, school, police, Department of Water Resources and commune health center have been working to support the villagers. Some of them live in the village, which makes it easy for villagers to contact them and some come to visit them. As for the veterinarian, district governor, fisheries office and forestry office, they rarely come to visit and do nothing to support them.

Table 5 Institutional analysis

Institution		Positive	Neutral	Negative
Government	Village leader	✓		
	Commune leader	✓		
	School	✓		
	District governor		✓	
	Veterinarian		✓	
	Forestry office		✓	
	Fisheries office		✓	
	Police and military	✓		
	Department of Water Resources	✓		
	Commune health center	✓		
Business	Moneylender			✓
	Shopkeeper		✓	
	Hawkers		✓	
	Middlemen	✓		
Civil society	UNICEF	✓		
	WFP	✓		
	FCS	✓		
	HAGA	✓		
	Pagoda committee	✓		
	SC/UK	✓		

Business

There were some business people investing and doing business with villagers such as the moneylenders and middlemen who come to buy agricultural produce. Villagers are satisfied with the middlemen but they do not like the moneylenders because they charge high interest rates and have no sympathy.

Civil society

Most of this group are international organizations (e.g., UNICEF, WFP) and NGOs such as FCS, HAGA and SC/UK. These organizations have worked in the village by providing credit, water filter facilities and food for working to

fix the dam. Some villagers have problems with the credit scheme but they still like these organizations and are satisfied with the services they provide.

2.4.2 Processes

Recently the government has made some policy changes that are having an impact on the livelihoods of poor people.

Overall the villagers were aware that the local authority took serious action to ban the cutting of trees to make charcoal and timber. They are satisfied with their intervention because it helps to preserve the remaining natural resources, but on the other hand, they now face the problem of being unemployed. When they cannot cut trees to make charcoal and timber they have to return to planting rice and other farming activities but they have no land or other equipment.

The abolition of the fishing lot system in favor of community management and development is a positive sign for villagers, however they have not been benefiting. The rich households in the village are able to dominate the resources as they can use bigger fishing tackle than poor people can afford.

2.5 Livelihoods Strategies

2.5.1 Current livelihoods strategies

The livelihoods strategies of the villagers vary according to their resources and individual skills. The rich and medium households rely mainly on dry season rice, monsoon rice and secondary crops. These groups have enough capital to buy agricultural equipment, enough draft animals and money to hire labor. They use big fishing tackle to catch fish, which allows them to catch more than the poor households do. Besides farming and fishing, members of these groups have other individual skills and capital to run their own businesses like pig slaughtering, battery charging, rice milling, telephone services, water supply, grocery shop and growing fish in cages.

As with the rich and medium groups, dry season rice, monsoon rice and secondary crop are important for the under medium group, but this group

has a smaller area to plant. In addition, the members of this group have to hire water pumps and draft animals from the rich and medium groups. They use small-scale fishing tackle to catch fish, with which they are able to catch enough for family consumption. They do not have other businesses like the rich and medium groups. Some of the members of this group earn money through selling labor when free from their farm work.

The poor and very poor groups plant rice by hiring land from the rich households or cooperating with them. They have to share about 50% of the production with the landlord. They are unable to catch as much fish as the rich and medium households because they cannot afford to buy suitable fishing tackle. Most of this group earns money through selling labor. Besides farm work, this group can earn money through making baskets, weaving thatch and making palm juice.

2.5.2 Problem ranking

Villagers currently face a range of problems in their livelihoods, which the study team assisted them to discuss. The six main problems were ‘pair ranked’ (Table 6) to find the most pressing, which was then analyzed to understand root causes. Villagers could then develop action plans to solve the problems.

Table 6 Pair ranking of problems

Pests destroy crops	Marketing of production	No bridge	Sickness	Pumping machine	Poor people have no jobs
	Marketing of production	No bridge	Sickness	Pumping machine	Poor people have no jobs
		No bridge	Marketing of production	Pumping machine	Poor people have no jobs
			No bridge	No bridge	Poor people have no jobs
				Pumping machine	Poor people have no jobs
					Poor people have no jobs
0	2	4	1	3	5

The results of 'pair ranking' showed that the major problem for villagers is that the poor are unemployed and that there is no bridge across the Saob channel.

Poor people have no jobs

Although the village has plenty of natural resources such as lakes and rivers to fish in, almost none of the poor households are able to exploit these resources and they rely mainly on selling labor. They are employed by the rich households during the cultivation and harvest periods but during the rest of the year there is nothing to do. Before the government bans, this group used to work in the forest cutting trees for making charcoal and timber, so they could earn money all year round.

No bridge

The bridge across the Saob channel is used for transporting produce from the farms and traveling to them. When there is no bridge it is less of a problem for the rich and medium households because they have boats to transport materials and products, but it is a serious problem for the poor households. The children and animals have to swim and sometimes the children cannot get to the farm. When harvesting, those who have no boat have to hire one to transport produce. Villagers did build a bridge but it is low and not strong so they can only use it in the dry season. In the monsoon season it is unusable because tree branches are carried by the water and hit the bridge.

2.5.3 Problem tree analysis

The major problem was found to be that the poor group had no jobs. The villagers thought this was a problem for one group in the village while having no bridge to cross the Saob channel was a communal problem. They decided to analyze further the bridge problem because this it has an impact on all groups (Figure 11).



Figure 11 Problem tree

The analysis showed that the root cause of this problem was that the bridge committee is weak and has no support from the commune leader. In the flood season, the water flow brings down tree branches which hit the bridge. Some people said the trees were coming from the mountain but the bridge committee felt that it was due to tree branches being used to trap fish in the dry season that were not taken out afterwards.

2.5.4 Action plan to build a bridge

Both the men and women who participated in the discussion decided to develop an action plan to build a bridge (Table 7). The first thing in their plan is selecting the leader, as shown in the analysis. The leader is

responsible for building a relationship with the commune leader and designing the plan.

The second step is for the leader to raise funds in the village, neighboring village or at the pagoda. When they have enough money, they need to declare the amount publicly to be transparent. The money will be organized and managed by the leader to build the bridge.

When they have money and permission from the local authority, the leader will write a policy governing the use of tree branches in the channel to protect the bridge. The leader should come from the existing bridge committee because they have experience in building bridges.

Table 7 Action plan to build bridge

Step	Initiative	Participants	Materials	Timeframe
Find a leader	Old committee	Villagers		Before 30 July 2002
Contact local authority	The committee	Village and commune leader and villagers		Any time
Design plan	The committee and carpenter	The committee and carpenter		October to November 2002
Raising funds	The committee	Villagers and neighboring villagers		February 2003
Find timber	The committee and commune leader	Villagers	Cart, hacksaw, axe	August to September 2003
Building	The committee	Villagers		November to December 2003

2.6 Livelihood Analysis Framework

As a result of the livelihoods study, the team were able to construct a framework showing the outcomes of the livelihoods analysis (Figure 12).

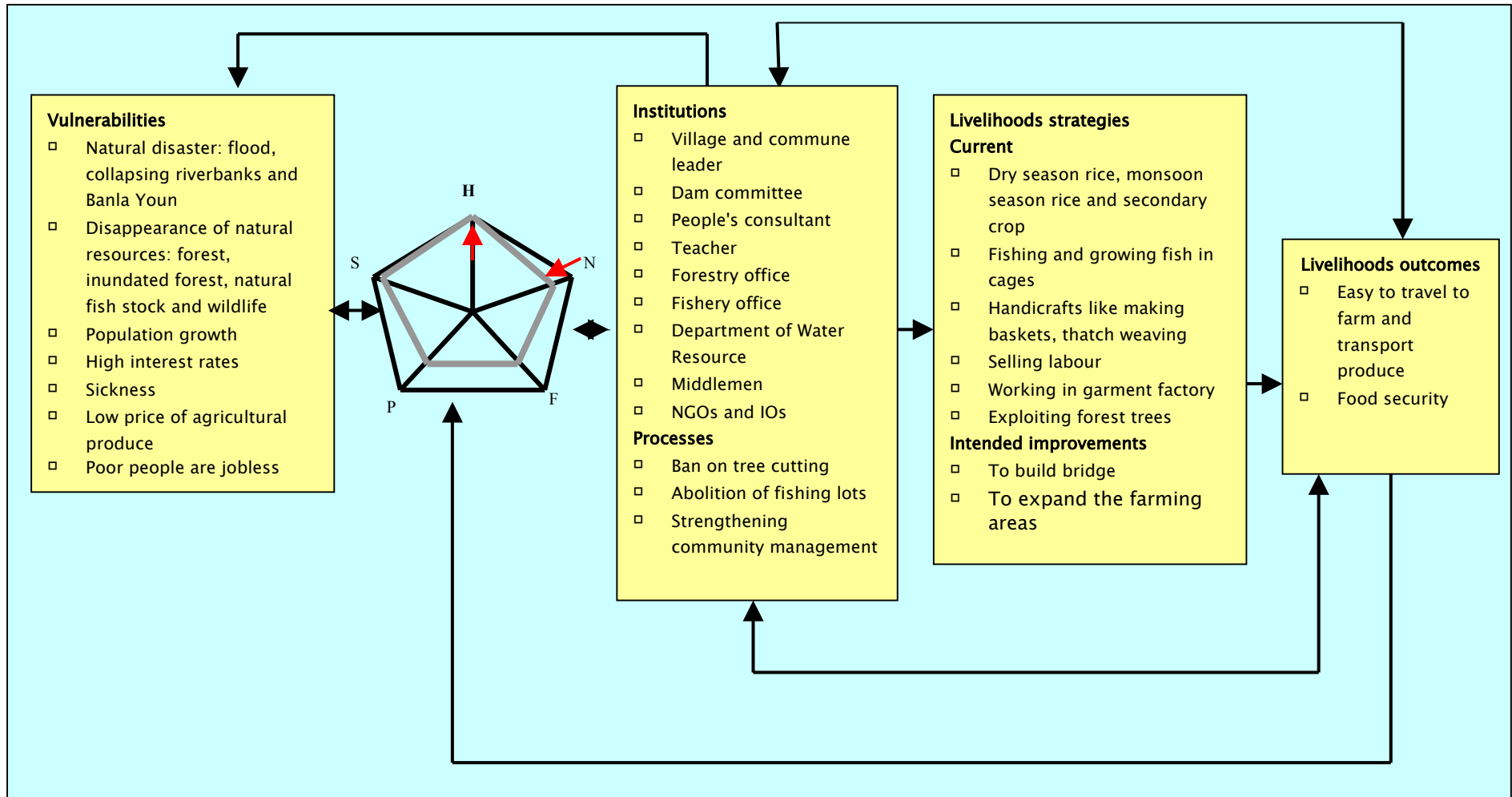


Figure 12 Livelihoods analysis framework

3. CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

As a result of the issues and problems discovered during the period of study in Saob Leu Village, the team was able to reach some conclusions about the current situation:

- The villagers have good relationships with one another and are willing to work in groups. Also the village has strong human resources, which is the key to helping develop the village. The old men, pagoda committee, dam committee, people's consultancy, teachers, village leaders and commune leaders are people whom the villagers recognize and respect.
- The population of the village has increased, leading to the degradation of natural resources because it has been necessary to expand agricultural areas by cutting the flooded forest where the fish spawn.
- Uncontrolled fishing is undertaken both by some people in the village, especially rich people who were able to use bigger fishing tackle, and by people from neighboring villages, so it is difficult for poor people in the village to catch enough fish.
- The villagers have found farming activities difficult because of the emergence of a new trees species, *bunla youm*. This tree species grows and spreads fast in farming areas and smothers the crops and other trees.
- Most villagers rely on credit sources from businesses, which can determine the price of agricultural produce and keep interest rates on loans high.
- The road and transportation system in the village is poor so it is difficult for villagers to communicate with the outside and transport their produce because there is no bridge across the channel.
- Most of the poor and very poor households in the village lost their jobs when the government banned harvesting in the forest.

3.2 Recommendations

Based on the above conclusions, the team would like to share some ideas for developing the village:

- There should be advice on family planning in the village.
- The establishment of the fishery community committee is a priority in the preservation of aquatic resources and helping poor households in the community access aquatic resources.
- The action plan developed by villagers to build a bridge cannot be achieved unless there is participation from the local authority and forestry office.
- The problem of the tree *bunla youm* should be considered a national issue.
- The villagers should have access to credit with low interest.
- Any program that promotes animal husbandry is beneficial to poor households in the village.