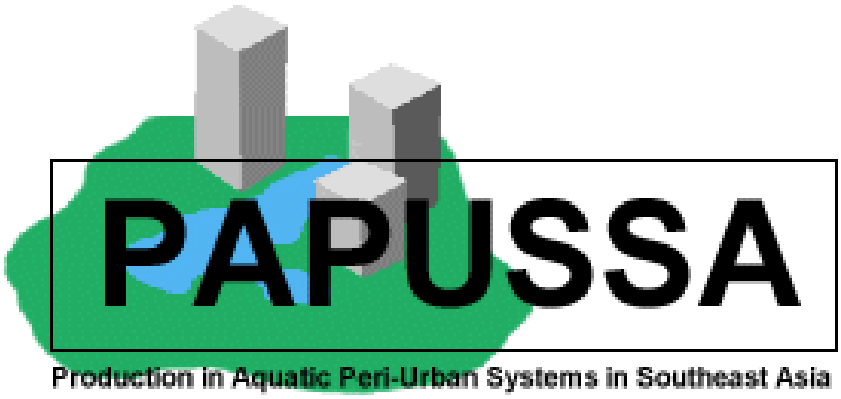

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Participatory Community Assessment in Peri-urban of Hanoi, Vietnam

From 21st October to 11th November 2003

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Acronyms and terms

DMC: Dong My Commune

DTC: Duc Tu Commune

HHs: Households

HLC: Hoang Liet Commune

NIHE: National Institute of Hygiene and Epidemiology

PCA: Participatory Community Appraisal

SRS: Self-recruiting species

RIA 1: Research Institute for Aquaculture N^{o} 1

TPC: Tran Phu Commune

VAC: Vuon - Ao - Chuong = Garden - Pond – Livestock

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Abstract

Participatory Community Appraisal (PCA) of four communities of Hanoi: Tran Phu, Hoang Liet, Dong My in Thanh Tri district and Duc Tu in Dong Anh district were carried out by RIA 1 and NIHE teams from 21st October to 11th November, 2003.

The communities were chosen as representative for aquatic production systems within the peri-urban area of Hanoi including aquatic plants, fish pond, VAC in wastewater; VAC and rice fish systems in non-wastewater.

The tools used in the PCA were Well-Being Ranking, Community Mapping, Timelines, Seasonal Calendars, Activity Matrix, Food Consumption, Resource Mapping, and Problem Ranking. The well-being ranking was carried out three times with different key informants before the actual PCA and was facilitated by 3 persons. The participants in the PCA were divided into 4 groups (worse-off women, worse-off men, better-off women and better-off men) to discuss the first of the 5 tools above. Only the fish and aquatic plant producer groups were then involved in the remaining tools: resource mapping and problem ranking.

Overall, Bang B village in Hoang Liet commune, Village 5 in Dong My commune, Duc Tu village in Duc Tu Commune and Khuyen Luong village in Tran Phu Commune have potential for selection in the next work packages. The communities are confronted with a number of issues such as health, urbanization, new production areas, conversion and changing usage of land areas, and relocation due to urban development. In the near future, it appears likely that Tran Phu and Hoang Liet communes are going to become swallowed up into the into Hanoi's rapidly expanding urban core.

1. Introduction

These studies were carried out from the 21st of October to 11th of November 2003 by a team composed of researchers from the Research Institute for Aquaculture Nos 1 (RIA-1) and the National Institute of Health and Epidemiology (NIHE) both located in Ha Noi. The RIA-1 team was composed of Kim Van Van, Nguyen Thi Dieu Phuong (PAPUSSA), Pham Van Trang (PAPUSSA), Nguyen Huu Hoa , Nguyen Tat Hao and Nguyen Chien Van while the NIHE team was composed of Phan Thu Phuong, Nguyen Dang Tuan, Nguyen Thuy Tram and Pham Duc Phuc. The NIHE team originated from the Institute's Division of Enteric Infections. The RIA 1 team first visited the communes on October 21st, 22nd and November 4th. Both RIA 1 and NIHE teams carried out the PCA process on 26th, 28th October and 1st, 6th November 2003. Analysis of the information gathered was done at RIA 1 and NIHE on October 27th, 29th and November 2nd and 7th. Then a 'debriefing' session with the villagers was carried out on 3rd, 5th and 7th of November 2003.

Once the communes sampling framework had been established, the RIA-1 team composed of Mr. Kim Van Van, Ms. Nguyen Thi Dieu Phuong and Mr. Nguyen Huu Hoa made an appointment with Ms. Luu Thi Sen, the head of Hoang Liet Agriculture Co-operative; Mr. Nguyen Van Lien, the head of Dong My Farmers Association; Mr. Do Duc Phuc, the head of Duc Tu Farmers Association and Mr. Nguyen Tien Vo, the officer of Tran Phu Commune on 21st, 22nd October and 4th November to gather information needed to select the specific villages for the PCA. From the results of this meeting, Bang B, Village 5, Duc Tu and Khuyen Luong Villages were chosen for the PCA. The communes were chosen representing aquatic plants (i.e. water dropwort, water cress and water morning glory) and fish culture in wastewater, VAC and rice fish systems.

2. Description of the Villages

Location

The PCAs were conducted at 3 communities in Thanh Tri district: Tran Phu, Hoang Liet and Dong My and in a commune in Dong Anh district as shown in Figures 1 and 2.

Bang B village of Hoang Liet commune is located about 10 km south of Hanoi center. To the south the village is bordered by the Kim Nguu river, to the east by Tam Hiep

commune, and to the west by Bang A village. Hoang Liet commune has 5 villages: Bang A, Bang B, Tu Ky, Phap Van and Linh Dam. It has a total land area of 0.48 km^2 of which agriculture occupies 0.41 km^2 (land for vegetable cultivation is 0.16 km^2, for rice cultivation is 0,25 km^2) and aquaculture is 0.02 km^2 with 5 households (HHs) producing fish in lakes.

Figure 1. Hanoi sub-urban area

Figure 2. Participatory Assessment in Communities in Thanh Tri district

Village 5 of Dong My commune is the old Vietnamese village 'My A" and is located near the national road N^o 70B in the southern part of Thanh Tri district about 15 km southeast of Hanoi city center and lies long the Red River on its eastern side about 1.2 km. It is bordered by Duyen Ha village to the north, Van Phuc commune to the east and south and Dong Phu village to the west. The main VAC systems are located in Thon 5. It has a total land area of 2.74 km^2 of which agriculture occupies 1.58 km^2 of which 0.65km is converted into VAC systems. Only group 5 has 0.35 km^2 of VAC systems with 32 Households involved. The water source which supplies these systems comes from the waste water from Hanoi city.

Duc Tu is one village in Duc Tu commune and Dong Anh district. Duc Tu village with the Duc Tu channel near Thach Qua village in Northeast, near Phuc Hau village to the

northwest, Duc Tu village is surrounded by the railway line to the southwest and near Bac Ha river to the southeast. It is located about 16 km northeast of Hanoi city center. The total land area of the commune is 8km^2 of which garden, ponds and livestock occupy 0.26 km^2. The water source used for agriculture comes from the Red River considered as the least polluted water source in peri-urban Hanoi.

Khuyen Luong Village is in the southern portion of Tran Phu Commune along the eastern part of Thanh Tri District. It is located about 7 km southeast of Hanoi City center and lies near the Red River on its eastern side. It is bordered by Yen So commune on the south and the west and Linh Nam Commune to the north. Tran Phu commune has 2 villages (Khuyen Luong and Nam Du Ha villages) with 11 groups (4 groups in Nam Du Ha village and 7 others in Khuyen Luong village). Both villages have aquatic plants and fish culture. Most of the households plant water morning glory while others plant watercress and water dropwort in the winter. It has a total land area of 3.78 km^2 of which agriculture occupies 2.21 km^2, aquaculture 0.61 km^2 and the remaining buildings and infrastructure. Seventeen households within the community are engaged in aquaculture. This commune has only one rice crop and one field crop for aquatic plants or fish culture during the year. Their water source mostly depends on rains and wastewater from Hanoi City (Report of Tran Phu Commune in First six months of 2003). These villages/communes were described on maps and in detail in the PCA reports of Tran Phu, Hoang Liet, Dong My and Duc Tu.

2.2 Population

The total population of Bang B village, Hoang Liet commune is 1,381 people composed of 362 households. 50% of the communes households are engaged in rice and aquatic plant cultivation, with only around 2.8% households specialized in producing aquatic plants; the remaining households are involved in working with poultry, woodwork, bricklaying and producing domestic instruments from inox steel.

The total population of Dong My commune is 5,995 people composed of 1,512 households. Group 5 has a population of 997 people in 245 households.

The total population of Duc Tu commune is 13,206 people composed of 3,079 households, of which only 269 households (about 8.8%) are not engaged in agriculture. At present only 166 households (5.4%) in the commune are classified as poor by

standards of Vietnam in urban areas (i.e. income of less than VND130,000 person/month in an urban area as being classed as poor). Duc Tu village has a population of 3,467 people consisting of 826 households and is divided into 3 sub-villages: Duc Tu 1, 2 and 3.

The total population of Tran Phu commune is 5,574 people composed of 1,365 households. 61.9% of the households (845 households) or 43.7% people (2436 people) of the commune are engaged in agriculture. At present only 12 households (0.87% households) in the commune are classified as poor (i.e. income of less than VND130,000 person/month).

2.3 Ethnic composition

All people in the communes: Hoang Liet, Dong My, Duc Tu and ten of the eleven villages in Tran Phu commune are non-Catholic. The only Catholic group is located along the Red River dyke in Khuyen Luong village, Tran Phu commune.

Historical profile of the community

To understand more about the communities, all PCA groups in each commune discussed and drew historical timelines of their own villages. Historical events such as the establishment of land reform, electricity, village road building, school building, "Hire 10" applied (government document giving permission for land use), and converting lowland areas into fish culture from 1945, 1955, 1960, 1962 to 2003 are shown in the detailed reports from each commune. However, there are differences in the groups' recall of these historical events, particularly Hoang Liet participant groups who mentioned very short timelines.

3. Physical characteristics of the community and resource systems

3.1 Map of the community

The community map of each commune was drawn by 4 groups (worse-off women, worse-off men, better-off women and better-off men's groups) and it is shown in Figure 3. All community maps are shown in the detailed reports of each PCA. Figure 4 is an example: the map of village 5 Dong My commune in Thanh Tri district drawn by the better-off women's group.

Figure 3. Participatory Community Appraisal by 4 groups: worse-off women, worse-off men, better-off women and better-off men

Figure 4. Map of village 5 Dong My commune in Thanh Tri district drawn by the better-off women's group

3.2 Seasons, weather and climate

The seasons, weather and climate events identified by all groups were shown in figures in each of the detailed PCA reports. Like the rest of Viet Nam, the community has 4 seasons: spring, summer, autumn and winter. The Chinese calendar follows these

seasons. The rainy season starts in January and February and peaks with heavy showers during March until August. The dry season is in September and October. November and December are the wintry months. The weather and climate events throughout the year are intrinsically related to economic activities, health, income/costs and other events of communities.

3.3 Production

The seasonal production is shown in each detailed PCA report. All groups mentioned their rice cultivation. Women's groups in Tran Phu mentioned producing one rice crop annually, but other groups mentioned two rice crops produced per year and the better-off men's group clumped rice with field crops in production. Water morning glory cultivation is mentioned by groups in Tran Phu and Hoang Liet communes and harvested throughout the year. Groups mentioned that kohlrabi, cabbage, mustard and tomato were planted, maintained and harvested in the late or early months of year between November – February. Raising livestock throughout the year was mentioned by groups in Duc Tu and Hoang Liet communes. All groups in Dong My, Duc Tu and the mens groups in Hoang Liet and Tran Phu communes identified fish culture. Fish culture practices are different amongst the men's groups. The better-off men's group start stocking fingerlings/small fish in March and April each year, on-grow them for 6 months and then harvest in November but the worse-off men's group stock and harvest every 2 to 3 months throughout year. Regarding aquatic plant culture, Water dropwort and Watercress were mentioned by groups in Hoang Liet and Tran Phu communities and they produce it in the winter season from November to February. Occurrence of fish diseases was not mentioned by most of the groups except for the worse-off men's group in Dong My who said that fish diseases happen from February to March and from August to September.

3.4 Natural and human resources

Each of the peri-urban communities participating in the PCA's have different and varied agricultural activities and resources such as aquatic plant cultivation, fishponds, VAC and rice-fish systems. Input/output analysis of aquatic plant cultivation systems are described in a resource mapping exercise involving the aquatic plant producers as shown below in Figures 5 and 6. Resource mapping was also used to gain a general overview of

health problems and available healthcare in each of the communities and is illustrated below in Figure 6.

The inputs for aquatic plant production include land, water, fertilizers and pesticides. Land area and land use were supplied by the government for each farmer since 1986 following the "Hire 10" policy of the Vietnamese government. Water is supplied and reused for aquatic plants from fishponds and originates from Hanoi's wastewater canal system, while fertilizers and pesticides are bought from markets. Most of the labour for planting, caring and harvesting the plants comes from the households which have traditionally specialized in aquatic plant cultivation. Sometime they get help with labour from within their own families or friends. The aquatic plants harvested from these systems are sold to wholesale markets via traders, then to retailers, and finally to the consumers. Some of their produce which is considered not fit for human consumption is used as feeds for livestock or fish.

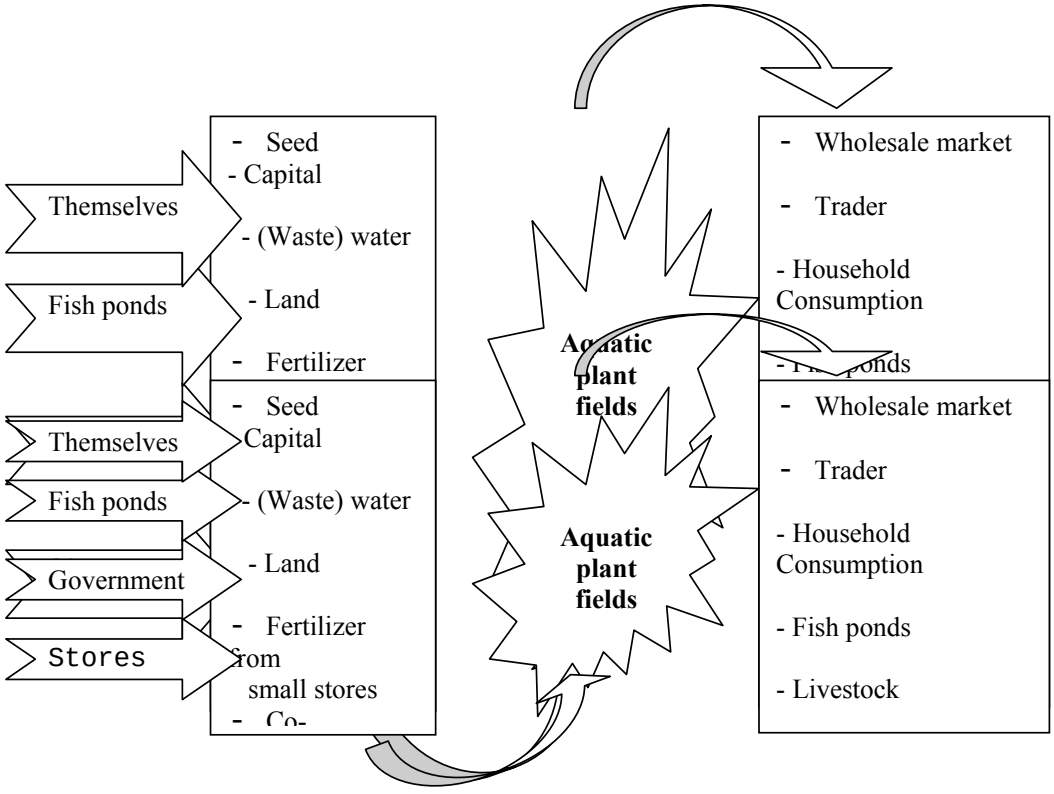

Figure 5: Resource mapping: Input/Output Analysis of Hanoi's Aquatic plant producers

Aquatic plant producers often spend prolonged periods of time in the field especially during harvesting such that they often have headaches, backaches and inflamed nails as their hands are immersed in the wastewater continually throughout the day. When they have simple health problems, they usually go to the local medical station or pharmacy (private or government) for a check up and to buy medicines. If it is a serious problem, they can generally all afford to go to the hospitals in the city.

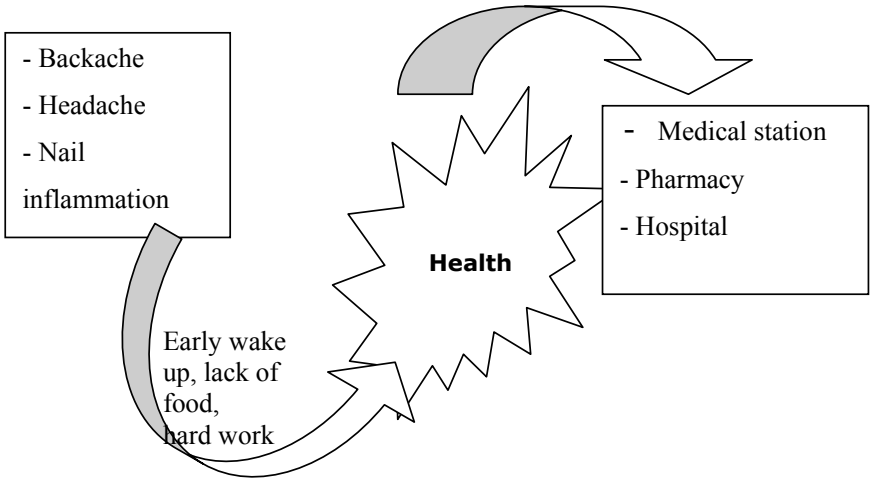

Figure 6. Health status of Aquatic plant producers

The resources used in aquaculture were described by the fish producers and are shown below in Figures 7 and 8.

The fish production systems use a supply of vegetables, agricultural waste products, and grass as feeds for the fish. The vegetables may come from the aquatic plant fields while the grass can come from the pond dykes. Vegetables and grass are feed for the grass carp. Only a small portion of the community can afford artificial feeds (i.e. commercially produced pellet feed) because it is not very widely available to the fish farmers because of high cost. Wastewater from the city is used in culture systems for the Indian and common carps, as it encourages the growth of algae and other aquatic flora and fauna which provide a ready source of nutrition for the fish. The water used in these fish culture systems mainly comes from precipitation, other ponds and from Hanoi's wastewater canal system. At certain times especially the dry season, use of more concentrated wastewater without adequate dilution can result in high fish mortalities resulting in considerable financial loss. In fish farms most of the labour used is provided

by permanent staff but additional rented labour is only used during busier periods of harvesting and pond preparation. Medicines and chemicals are not commonly used for treating fish diseases, however lime (CaO) is used regularly in preparing ponds prior to stocking.

The fish and other aquatic animals produced are sold onsite at the dykes of the ponds to traders. Some production is used for home consumption and for feeding livestock, especially dead and small fish. The water from the fish ponds are also used to supply other ponds, gardens and to wash out livestock cages.

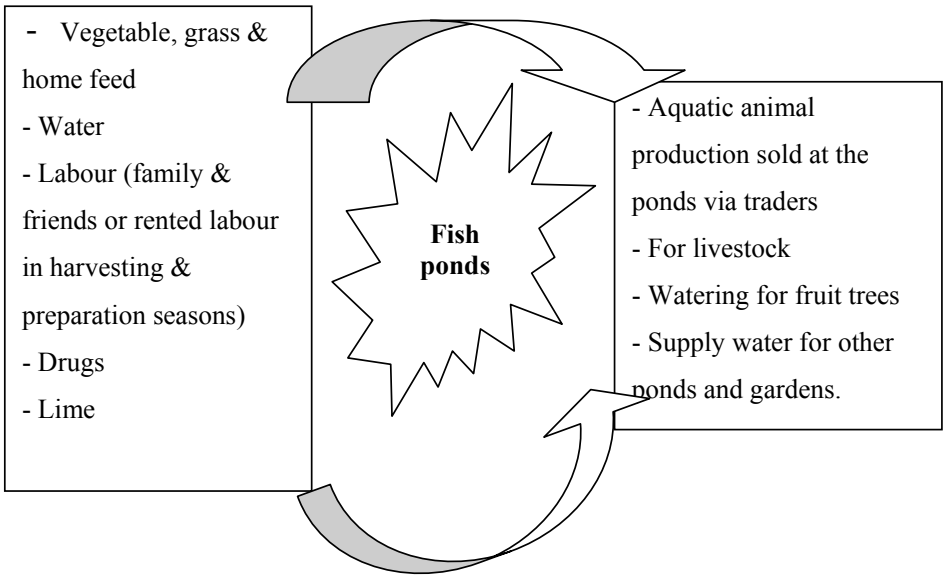

Figure 7. Resource mapping of fish producers

Talking about the wastewater fish farmers, as the worse women's producer group spends a lot of time in the water and in the mud, they commonly get rheumatism (old people), sore eyes and various skin diseases. Skin diseases often are reported to occur during summer possibly because during this time they usually have more contact with wastewater. When this group has health problems they also use the same treatments and places which the aquatic plants group went to.

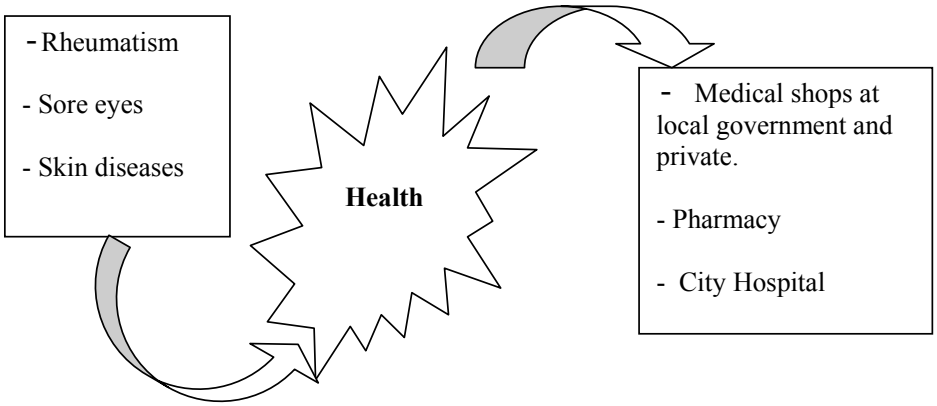

Figure 8. Health status of fish producers

Inputs and outputs for rice/fish ponds are described below in Figure 9. These inputs include fingerings, which are often self-produced by farmers or bought from RIA1; fish feeds used are often pig, chicken manures ie pond fertilizers promoting the growth of algae rather than actual food. The wastewater is pumped by the Farmers-Co-operative with the farmers paying an annual monthly fee for it. Generally fish produced are sold to fish wholesalers markets via traders however a certain proportion of fish production is sold through retailers to consumers and also some fish from wastewater ponds are transported and sold outside the city.

Because of the nature of this work, those working in fish farming often suffer from lack of sleep, headaches and skin problems, the latter believed to be from exposure to waste water. If the fish farmers have health problems, firstly they use self-treatment with local herbs and medicine. If the illness worsens they go to the commune health station or private health personnel in the commune, and possibly go to the provincial hospital.

Rice cum Fish producer group

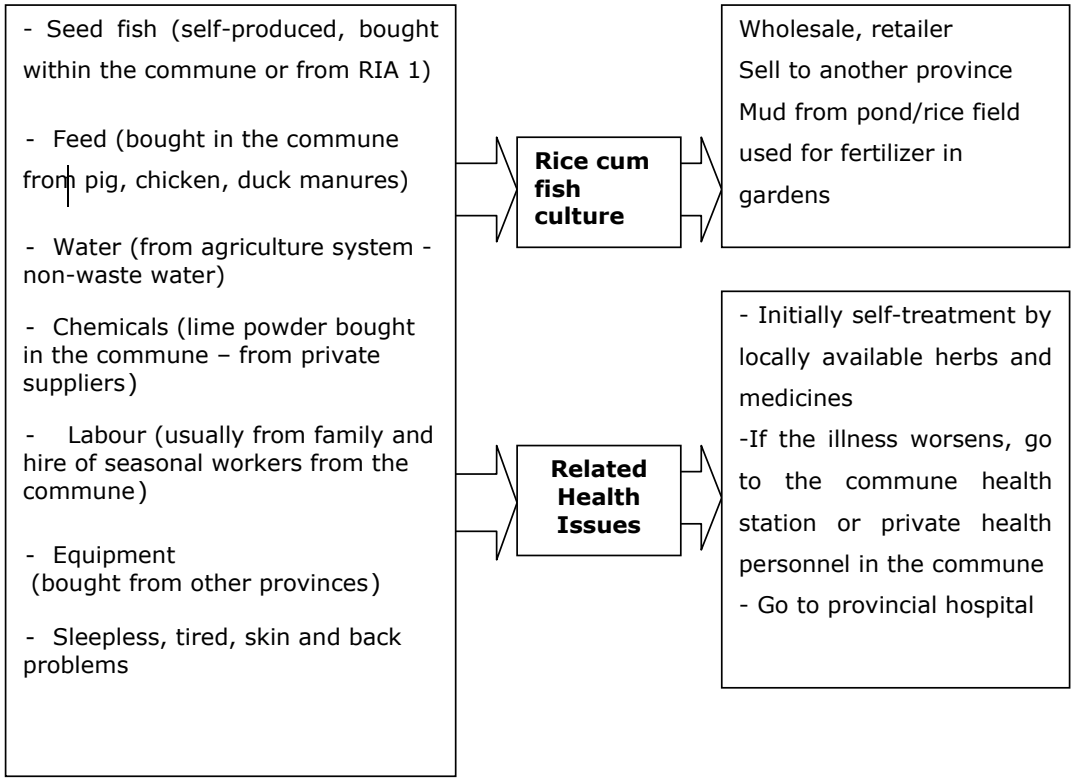

Figure 9. Resource mapping & Health status of rice cum fish producers.

Garden-Pond-livestock producer group (VAC)

The inputs of the garden, pond and livestock (known as VAC system) raising group were separated into categories depending on the type of production (shown in Figure 10). In general certain outputs from one system can be used as inputs into another. For instance mud from fish ponds can be used as fertilizer in garden, or vegetables from garden can be used as food for the fish. The farmers in this group did not mention about health problems perhaps because they did not relate the occupational risk to health.

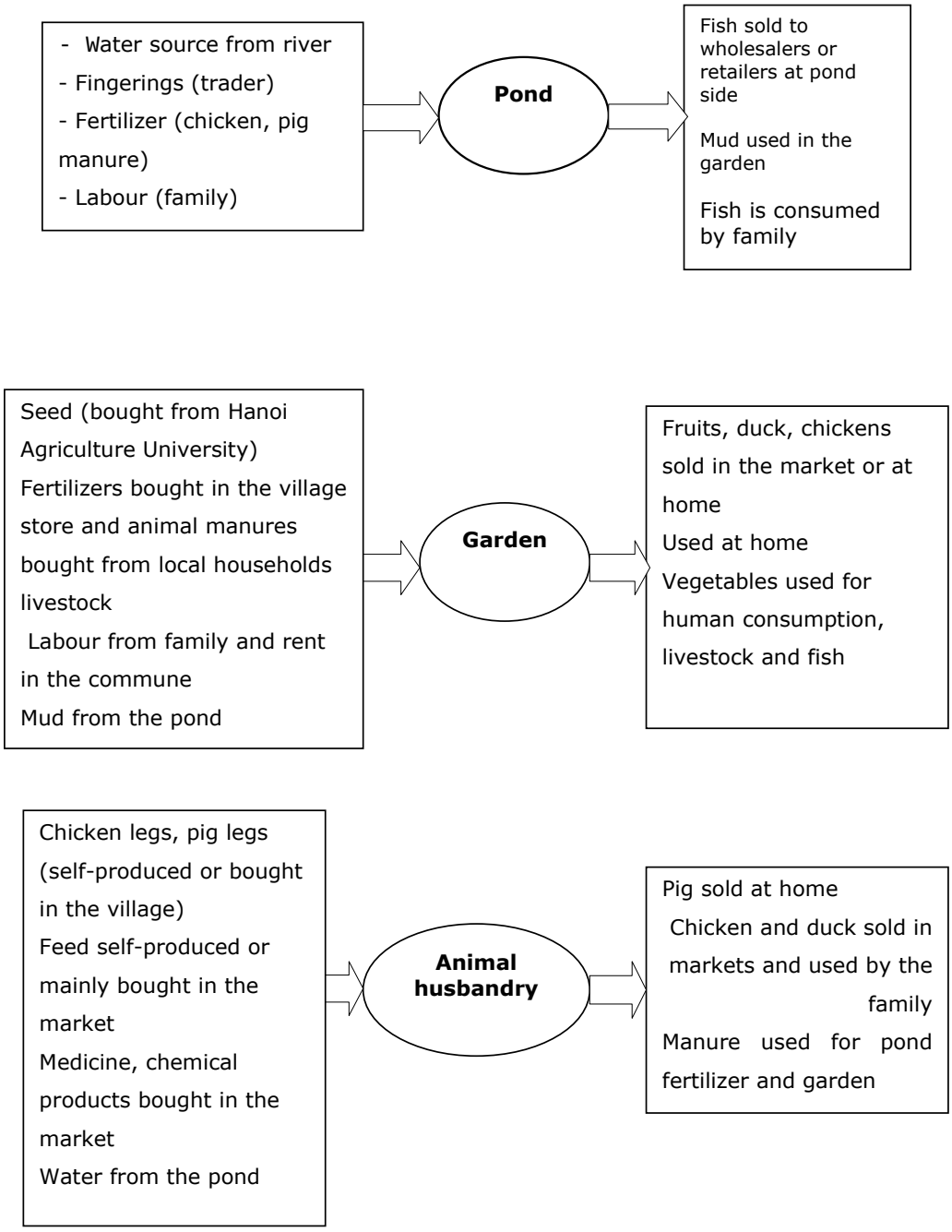

Figure 10. Resource mapping of garden-pond-livestock producers

4. Social characteristics of the communities

4.1 Well-being Ranking

The list of participant HHs and individual farmers were chosen from each of the 4 communities by initially interviewing key informants: Mr. Ngo Van Hoa (Vice Head of Bang B village), Mr. Nguyen Van Lien (Head of Dong My Farmer Association), Mr. Do Duc Phuc (Head of Duc Tu Farmer Association), Mr. Nguyen Xuan Huong (Head of Khuyen Luong village) and some others key informants. The category for the key informants including representing different occupations in villages such as aquatic plant production, fish production, fish traders, rice cultivation, nursery, raising dairy cows, etc. as well as maintaining a gender balance and social status balances. Resulting from these interviews 4 lists of participants were produced for the PCAs at the 4 communities, and are summarized below:

Bang B village: of the 36 HHs invited there were 17 women and 19 men. Village 5 in Dong My had a list of 31 households comprising of 15 women and 16 men; Duc Tu had a list of 34 HH (18 HHs in VAC production and 16 HHs in rice - fish production, there were 17 women and 17 men in the list). Khuyen Luong village introduced a list of 36 HH (18 women and 18 men). The name of each household was then written on a card and shown to each key informant to rank 3 times independently based on the criteria that key informants provided. This is shown in Figure 11.

Figure 11. Well-being Ranking by key informants

We explained to the informants that the aim of the activity was to gather information on the well being/socio-economic status of village families and to suggest criteria that could be used to describe socio-economic levels. Typical criteria included: income level and sources of income, land area, house, ownership of motorcycle, telephone, TV, refrigerator, educational attainment, quantity and quality of daily food. The results of Well-being Ranking are shown detail in the individual Tables of each PCA report.

The list of households is presented in Appendix 1 of each detailed PCA report. After classifying the 4 groups, they were invited to join and attend the actual PCA. The list of participants and facilitators is shown in Appendix 2 of each of the detailed PCA reports.

4.2 Social events and festivals in seasonal calendar

The seasonal calendars for each of the communes were done separately by men and women's groups which are shown in the Tables in each detailed PCA report. The calendar used was the Chinese calendar which is one month later than the Roman calendar. All groups in Hoang Liet mentioned a village festival in August and the wedding season beginning in January. All groups in Dong My and Duc Tu communes mentioned the wedding season from August to New Year and traditional festivals in January, February and March. All groups in Tran Phu commune mentioned a village festival every 10th of February, the wedding season from August to February and New Year as their main social events and festivals. The festival on 24th February was mentioned by the worse-off men's group in Tran Phu commune. Other social events and festivals were mentioned in detail by the better-off groups in Tran Phu commune include a grave visiting festival, pardon festival, mid-autumn full moon (for children's holiday) and pre-new year every 23rd of December. Only the better-off men's group in Tran Phu commune mentioned having festivities when they exhume the bones of their loved ones for reburial in a final tomb chosen by geomancer during November and December and birthday feasts during the spring season (after new year). The offering of sacrifices to the village every 24th April was mentioned by the better-off women's group in Tran Phu commune.

4.3 Migration

Migration from the communities to the city to find work in the (casual) rent labor market is known to occur but was not reported in any PCA. Perhaps the reasons why they didn't mention this is because within the different PCAs the participants did not have exact data to talk about this and the facilitators were not experienced enough to bring it out.

4.4 Health issues

Health issues were mentioned in the PCAs including ailments such as flu, headaches, backache, tiredness, skin diseases, respiratory inflammation and allergies. These diseases are shown in the Tables of each detailed PCA report. The occurrence of disease was mentioned by all of the groups, but illness happened at different times during the year and depending on the weather changing, hard work and culture seasons.

4.5 Food shortages and seasonal effects

In the Feedback Meeting it was discussed that almost all farmers in Tran Phu commune had only one rice crop per year that they harvested between April and May so that rice usually has to be bought during January to April in the local market. This information was not shown in the seasonal calendar.

4.6 Income generating activities/livelihoods

Almost all income in this commune comes from agriculture through the production of, amongst others, water morning glory, watercress, water dropwort, fish, rice, corn, beans, milk from cows and livestock. Some income sources come from part time/seasonal work such as construction and traditional handicraft production. Income is shown in the Tables of each detailed PCA report. Although most of the water morning glory harvesting happens between April to August, the worse-off groups in Tran Phu commune get income from this activity throughout year because during other times (e.g. winter and spring), the commune has income from water dropwort and watercress. All groups have income from rice harvesting from April to May and September to October. Livestock contributes incomes to households in the communes throughout the year. Some of the significant costs reported by the groups include expenditure for weddings, birthday feasts, festival seasons (around Tet holiday) and the children's education.

4.7 Food consumption and sources

The participants provided a list of food they eat and its sources, whether produced, purchased or collected by themselves, locally or from outside (Tables of each in detailed PCA reports).

All groups mentioned rice, water morning glory, pork, fish, kohlrabi, cabbage and tomato as their commonly consumed food. Rice and water morning glory are mostly produced locally within most communes and supplied throughout the year. Except Tran Phu commune, they have to buy rice from January to March, because they only produce one rice crop a year during April and May. Most households raise pigs to sell and not for their own consumption. VAC producer groups produce most of the food they consume themselves such as chicken, duck, egg, vegetable, fruits and fish. But most groups mentioned that they have to buy fish for consumption throughout year even though some of them already culture them because they eat large size of fish and it is not convenient to harvest their fish when the fish are still small.

The better-off groups in Tran Phu commune mentioned water dropwort and watercress, which they mostly produce. These aquatic vegetables were not mentioned by the worse-off groups in Tran Phu and perhaps are not common in Tran Phu commune. We saw during the PCA that morning glory production occupied more fields than water dropwort and watercress. Tofu was mentioned by all the groups which they buy throughout the year. Fruits such as grape, apple, bananas, papaya, etc. are purchased fresh and seasonally throughout the year. Chicken, duck and eggs were also mentioned by the groups. They mainly produce and buy a little of these food items. Some households in the commune raise dairy cows to produce milk for home consumption.

Wild natural aquatic animal resources are declining due to increasing water pollution, over harvest, people using pesticides and lime, etc that affect natural animal resources, therefore most communities have limited opportunity for harvesting such wild food sources, except some communities could harvest field crabs, snail and wild fish during certain times of the year.

5. Activity profile of members of the community

The daily activities of all groups in all communes are shown in Figures 12, 13 and 14.

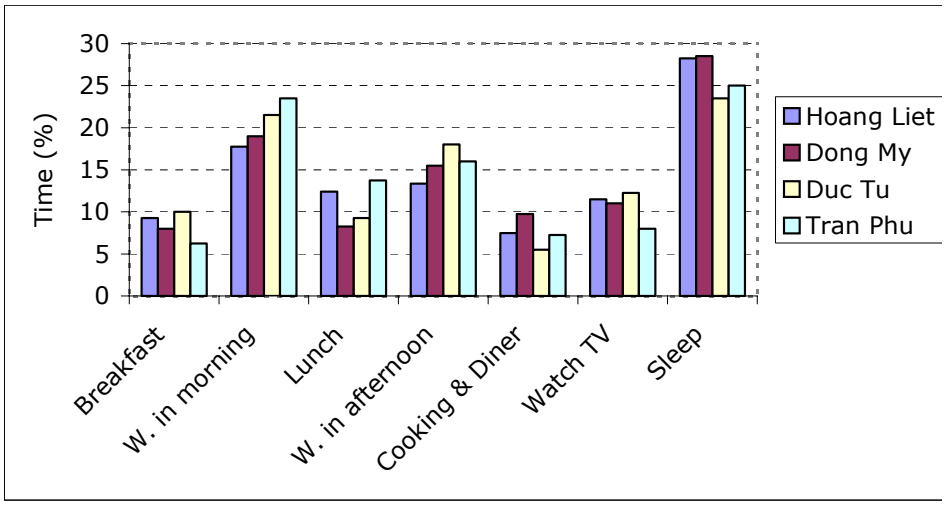

Figure 12. The difference in daily activities of the 4 communities

The different communities have different times for their activities in daily activities such as Tran Phu community has more time for working in the morning than other communities and they need more time for relaxation after lunch because they have to wake up early morning for water morning glory harvesting and have short time for breakfast and sleep. For the VAC communities such as Duc Tu commune they have special work in the afternoons to take care of their gardens and livestock.

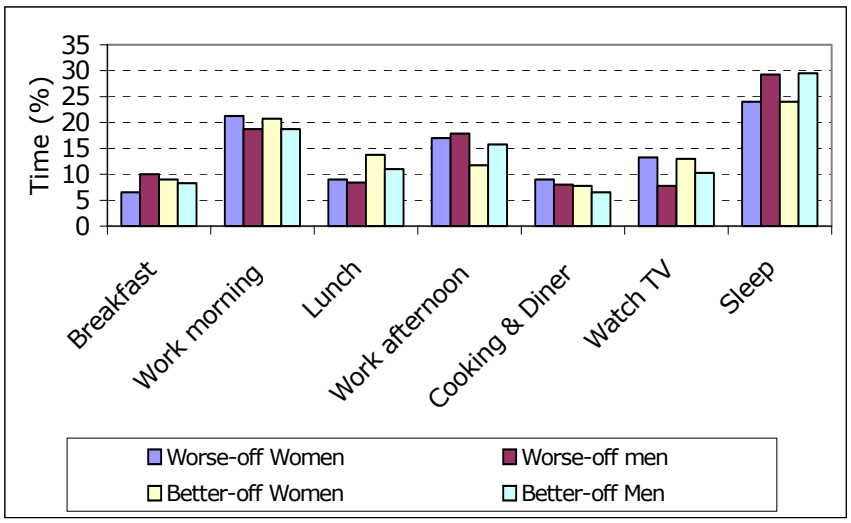

Figure 13. The difference in daily activities between different income and gender groups in the communities

Men have more time for sleep than women and women have more time for watching TV and working in the morning than men. Worse-off women have shorter time for breakfast than other groups whilst better-off women have shorter time for working in the afternoon. The worse-off men comparatively have the least time (around 2hrs/day) for watching TV.

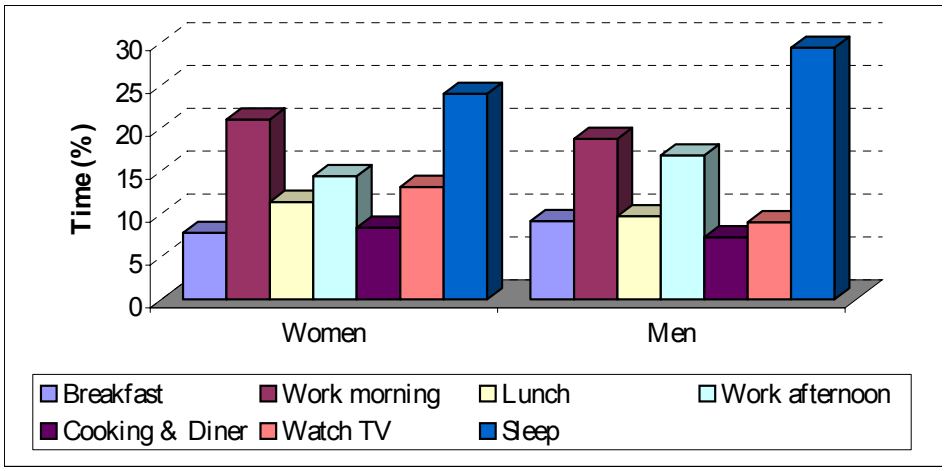

Figure 14. The difference in daily activities of Women's and Men's groups

The women spent more time cooking, watching TV and working in the morning than men because women have shorter sleep and wake up earlier than men. But men spend more time for working in the afternoons than women.

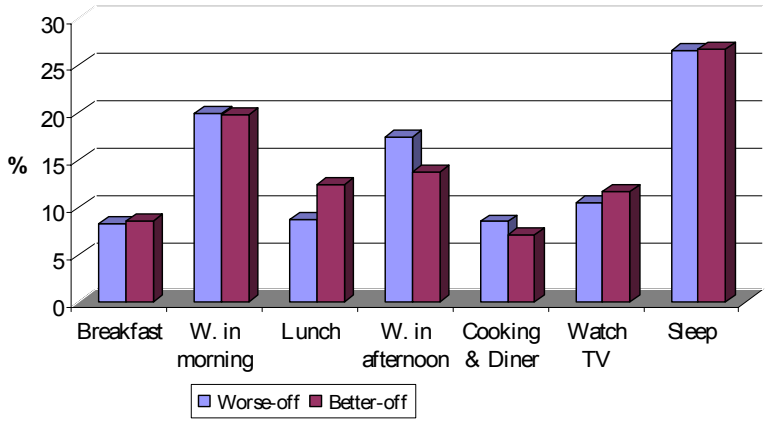

Figure 15. The difference in daily activities of the worse-off and better-off groups

The average time for sleep of farmers in all communities is around 6hrs. The time for sleep, breakfast and working in the morning for worse-off and better-off groups are not significantly different. However the worse-off groups spend more time working in the afternoons and less time for lunch and relaxation than the better-off groups.

6. Problems of Producer Groups

In these villages the producer groups were divided into special groups to discuss problems associated with their production systems and relating to their health. All communities have problems such as lack of freshwater for production and domestic activities, lack of capital for investment in their farms. This is shown below in Figure 16.

Other problems include lack of infrastructure in converting new areas of land into VAC systems (such as Dong My),difficulty in obtaining a red license certificate for using land in Duc Tu commune, short time for land bid contract in fish producers in Tran Phu commune and rice fish producers in Duc Tu commune (this rental/ownership of land is normally for only 5 years); uncertain future plans for land use by the city authorities making it difficult to protect their production for rice fish producers in Duc Tu commune and small areas difficult for developing production in Hoang Liet commune.

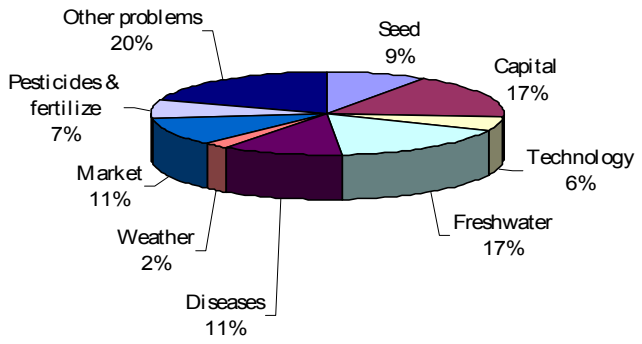

Figure16. Major problems of producers in the communities

For the aquatic plant producers group in Tran Phu commune it is hard work as they have to wake up early each morning (1-2 AM) to harvest and prepare aquatic vegetables for pick up by the traders. In this business premium is placed on freshness of the product. Sometimes they do not have good places or it is forbidden to sell their produce so that they get low incomes. The aquatic plant group lack information about the safety and effectiveness of using pesticides so they spend considerable money buying pesticides in order to control insects without being successful. Recently mice have been destroying a lot of water morning glory farms but farmers are unaware of how to control them. For water morning glory planting, the problems about techniques and seeds are not as important, as this is a traditional job of farmers in this community. This is shown in Figure 17.

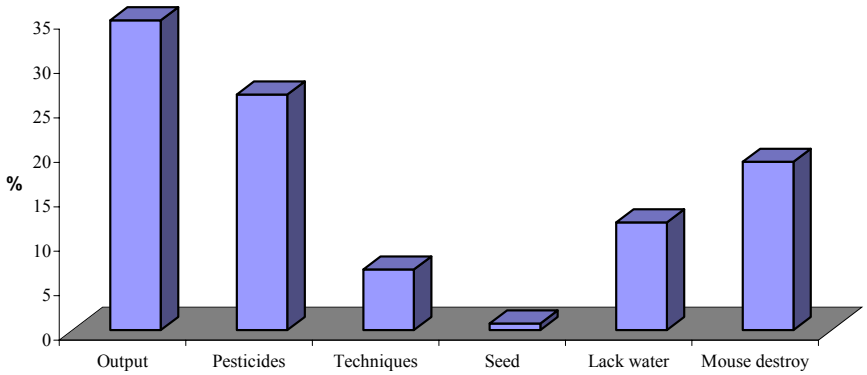

Figure 17. Major problems of aquatic plant producers in Tran Phu commune

The fish producers group in Tran Phu (Figure 18) has a big problem about the future of the land they are using for their fish culture as other land uses or developments may come in and marginalize them. This has resulted in their reluctance to make further investments to improve their dykes, stock fish and improve feeding. All members of the group feel very strongly about it. The second problem ranked is the lack of fresh water for fish culture. This is further heightened by their old irrigation system which makes changing water when farmers need supplies of fresh water for their fish ponds very difficult. They have to wait for rain to come or get water from other ponds. This adversely affects the growth of their fish. The contracts for land use are very short within 3-5 years so that it is not enough for farmers to feel secure and repair unstable banks. Most farmers want to have more time for land use contracts. It could be 15-20 years. To improve their yield the farmers need more money or capital to buy feeds. Other problems listed and ranked by the group were lack of markets, poor quality of water source due to waste water and pesticide pollution from washing pesticide pumps used in controlling insects. Fish diseases were not considered a major problem in the community as most farmers have large areas and stock their ponds at low densities (extensive and semi-intensive) and have limited requirement for pond management.

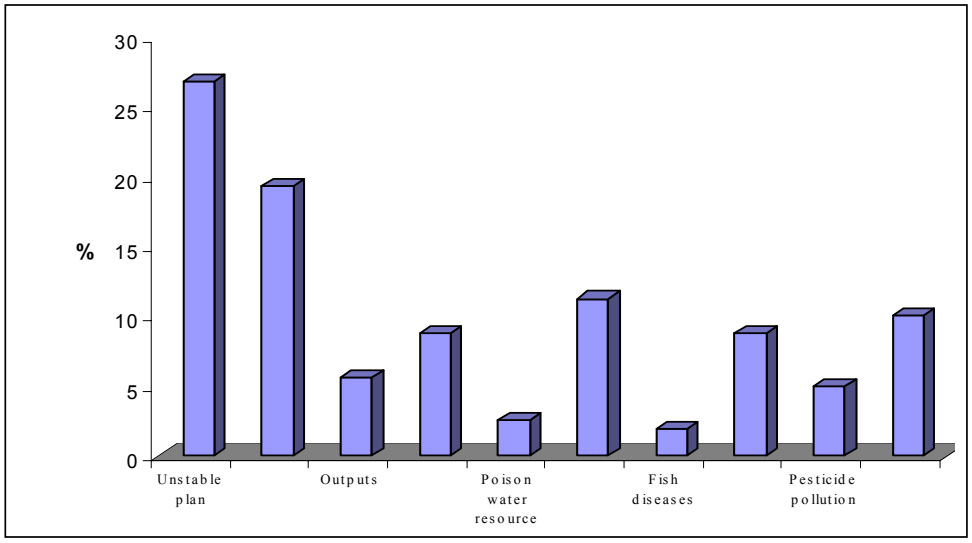

Figure 18. Problems of fish producers in Tran Phu commune

Both aquatic plant and fish producers in the communities mentioned rheumatism, skin diseases and backaches as their main health problems. But they rank these problems

differently. Skin diseases are big problems for fish producers (Figure 19) while backaches and rheumatism are the major problems for the aquatic plant producers. Headaches are not so much of a problem amongst fish producers but it was the second major problem among aquatic plant producers (Figure 20). Sore eyes was mentioned by fish producers but was not mentioned by aquatic plant group. All diseases of aquatic producers in the communities are shown in Figure 21.

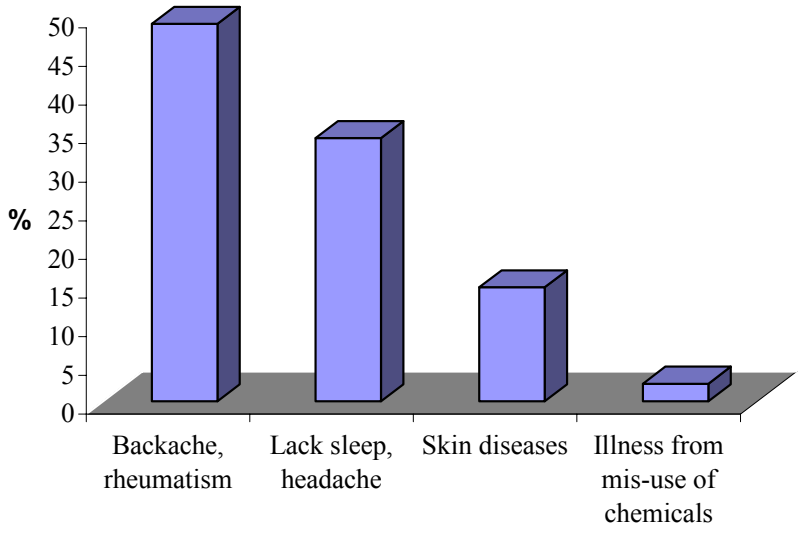

Figure 19. Major health problems of aquatic plant producers in Tran Phu commune

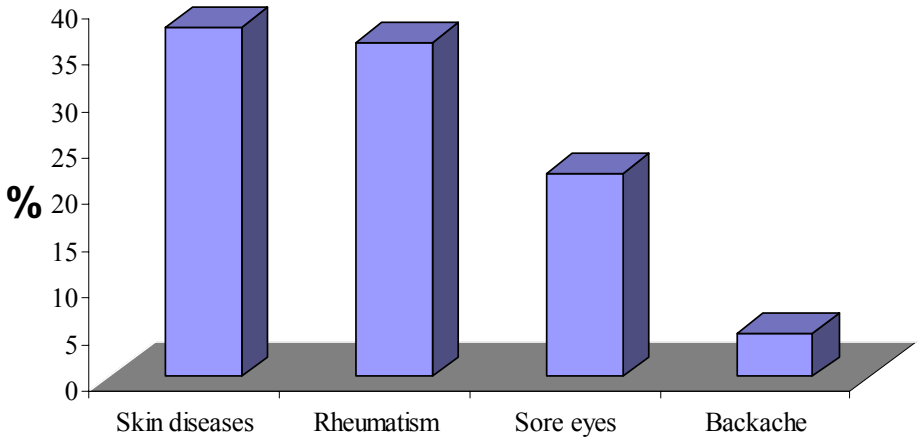

Figure 20. Major health problems of fish producers in Tran Phu commune

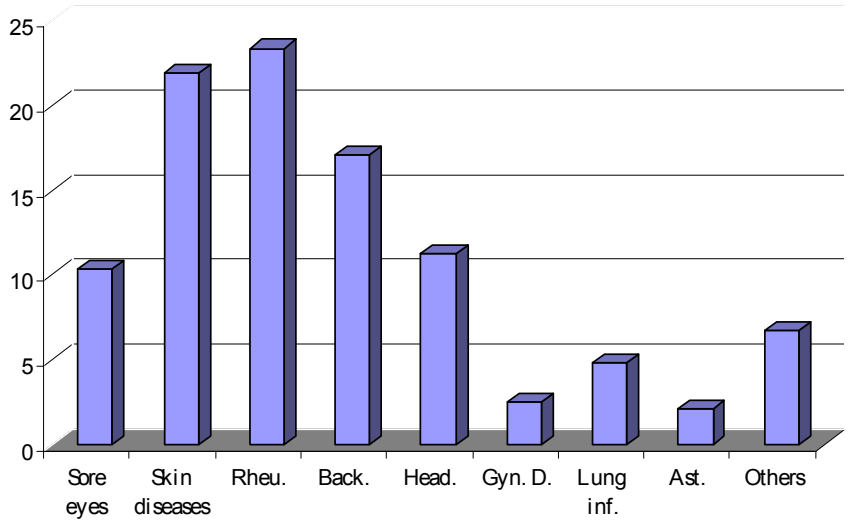

Figure 21. Major health problems of aquatic producers in the communities

Other diseases include fever due to viruses, cough and flu were mentioned by one group in Hoang Liet commune. The producers in VAC systems have a lot work to do after meals so they often get stomach-ache. Some producer groups also discussed the causes of their own ill health and this is shown in Figure 22.

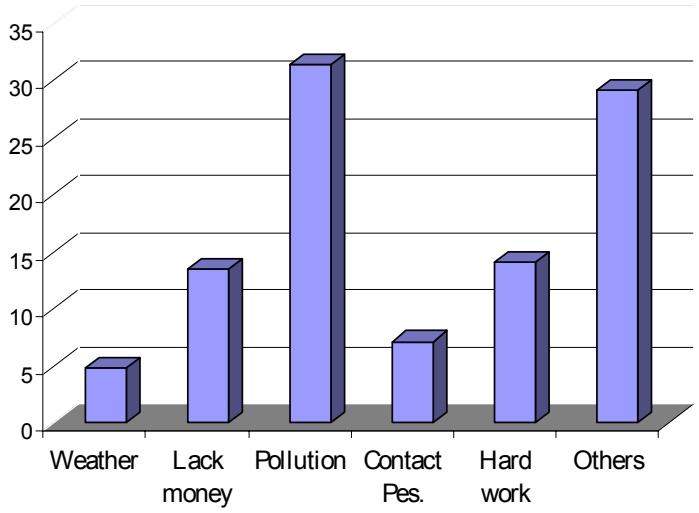

Figure 22. Major causes of ill-health described by aquatic producers

Problems concerning the health of aquatic producers mentioned tended to relate to environmental pollution. Most wastewater sources are not treated and flow directly into rivers and channels leading to pollution and adverse effects on public health. As well as lacking capital for investing in their production systems, people lack money for checking their own health when they are sick and have to come to hospital. Some other problems relating to the health of producers are lack of fresh water and contact with wastewater, foods which have originated from artificial feed and chemicals, high prices of medicines and an overall lack of information about health services.

Conclusions and Recommendations

In the short time (October and November, 2003) 4 PCA's were carried out in 4 communities of 2 districts in Peri-Urban Hanoi. These communities were chosen as representative for aquatic production systems of Hanoi city. Hoang Liet commune for aquatic plants (i.e. water dropwort, water cress and water morning glory) in wastewater; Dong My commune representative for a former area of lowland rice field converted into VAC systems; Tran Phu commune is representative for both aquatic plants (mainly water morning glory) and fish culture in wastewater but Duc Tu commune is a control area and representing non wastewater VAC and rice-fish systems.

These communities are appropriate for selection to studies in the next work packages of project. We have established good relationship with the communities, which are good for future collaboration. These communities have characteristics which meet the purpose of research of the PAPUSSA project such as the following issues: public health, urbanization, waste water, and relocation due to urban development. In the near future, Tran Phu and Hoang Liet communes are likely to become incorporated fully into the urban area of Hanoi.

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