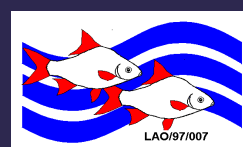


Gender and Aquaculture in Lao PDR: A synthesis of a socio-economic and gender analysis of the UNDP/FAO Aquaculture Development Project LAO/97/007



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A synthesis of a socio-economic and gender analysis of the

UNDP/FAO Aquaculture Development Project

LAO/97/007

A Case Study

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Authors:

Úna Murray,

Kesone Sayasane

and

Dr. Simon Funge-Smith

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SUMMARY

The gender and socio-economic roles of men and women in different forms of Lao aquaculture (pond, rice-cum-fish, mini-hatchery) have so far not been studied in-depth. This socio-economic and gender analysis of Lao aquaculture was conducted in five Lao provinces within the scope of the UNDP/FAO project LAO/97/007 in mid-1998.

There are several traditional fish farming practices. There is a potential for increasing the scale and efficiency of aquaculture activities in Lao PDR. However, aquaculture needs to be integrated into existing agricultural livelihood systems.

There are high levels of interest among women and men farmers towards aquaculture. Easy access to fish for the family is one of the main reasons for both women's and men's interest in raising fish in Lao PDR, with income generation as an added bonus only where surplus fish is produced. However there are high labour and financial entry costs for pond based aquaculture, which only some farmers may be able to sustain.

Both women and men are involved in aquaculture, although each have different roles at different stages of the fish production cycle. In Lao PDR, men select the site for pond construction and as heads of households are regarded as owners of ponds. The production from ponds depends largely on the time and effort allocated by women and children for pond management and for feeding of the fish. Men are responsible for harvesting the overall yield, and women are often responsible for harvesting fish for household consumption. Women control the cash income from the selling of fish at the pond site and in the market, although consultation with their husbands on household expenditure is common.

While in theory women have access to aquaculture training and extension, in practice their access can often be limited because of gender biases in extension services. Existing village fish farmer groups are largely composed of men. There is scope for inclusion of more women fish farmers in such groups, or establishing women fish farmer groups. The Agriculture Promotion Bank (APB) is the only source of formal credit for rural farmers. So far, credit programmes have not yet supported aquaculture because it is still considered a risky venture. There are opportunities for gender sensitive aquaculture promotion through other organisations such as the LWU.

On the basis of the study findings, this report presents a range of practical recommendations for more gender sensitive aquaculture development in Lao PDR.

ABBREVIATIONS

FAO	Food and Agriculture Organization of the United Nations
GRID	Gender Resource Information and Development Centres
LWU	Lao Women's Union
NGO	Non Governmental Organization
SEAGA	Socio-Economic and Gender Analysis
UNDP	United Nations Development Programme

UNITS

1 US \$ = approximately 3,500 Kip (August 1998)

1. INTRODUCTION¹

1.1 Rationale and Background

The evaluation of aquaculture projects in Lao PDR emphasised that the activities of aquaculture projects should not be limited only to technological aspects of fish culture, but should also include consideration of socio-economic and gender issues. Previous aquaculture projects revealed that women play a pivotal role in fish production as well as in marketing.

Recognising the potential role of women in aquaculture development, it was noted that special efforts need to be made in order to ensure that the aquaculture project is more gender sensitive and reaches both women and men and to actively include women in new fish farmers groups formed in the current United Nations Development Programme (UNDP)/Food and Agriculture Organization of the United Nations (FAO) aquaculture development project.

In the design and initial implementation of Aquaculture Development project (LAO/97/007) gender roles, opportunities and constraints in different stages of fish production were not yet fully identified. Also, the extent to which the introduction of aquaculture projects added to women's workloads and its effects on household labour were unknown. Whether aquaculture projects provide tangible benefits to women was not clear. Lastly, further knowledge was required on the gender division of work in all aspects of fish farming, from production to processing.

On the basis of the above, a detailed analysis of the role of women in aquaculture was recommended. It was decided that a gender study would be conducted within the broader socio-economic framework of aquaculture in Lao PDR and in the specific context of the UNDP/FAO Aquaculture Development Project (LAO/97/007).

This gender study was carried out over a period of two months from June to August 1998 by a team of an international and national consultant. The study was conducted in close cooperation with women and men villagers, staff of the Ministry of Agriculture and Forestry, the provincial and district project staff, FAO and UNDP staff and various other stakeholders.

¹ The following report is an edited and summarised version of the full research report (Murray and Sayasane, 1998). For more details please refer to the full report, that is available in both English and Lao languages from the Ministry of Agriculture and Forestry, Department of Livestock and Fisheries, Vientiane, Lao PDR and also available in English from the Women in Development Service, FAO, Rome, Italy.

1.2 Lao PDR

Lao PDR is the most sparsely populated country in South East Asia with a recorded population of 4.58 million in 1995. The population is predominantly young with 45 percent under 15 years of age and is projected to double within three decades. The average size of the Lao family in the project areas is 7.8 – 8.2 members (LAO/97/007, 1997 survey data) and life expectancy at birth is 53 years for women and 50 years for men (UNICEF, 1996).

In 1988, 85 percent of the Lao PDR rural population was living below the poverty line (IFAD, 1992). Between 1986 and 1995, the average annual household income doubled to \$350 per capita (UNICEF, 1996). Consequently, by 1995 almost 50 percent of the Lao population was poor according to a study by the World Bank.

Most of the population lives in rural areas and over 80% of the population depends on agriculture for their living. Agriculture accounts for about 59 percent of GDP. Increasing population pressure is creating a growing demand for food and competition for natural resources. 1995 census data indicate that only 15% of the population live in urban areas.

Lao PDR is an ethnically diverse country. The diverse population is represented by 68 ethnic groups. These can be categorised into three major groups: 1) Lao Loum – 59 percent of the population, occupy the low land plains and Mekong river valley; 2) Lao Theung – occupy the lower mountain slopes, comprise 32 percent of the population and 3) Lao Soung – 9 percent of the population, occupy the mountain tops over 1,000 metres, include the Hmong or Mien tribes.

Data show that 51 percent of the population is female and 49 percent male. Especially in the age group of 40 – 70 years there are more women than men, attributable to war casualties. The population distribution by age group, sex and marital status, shows a high proportion of female divorcees and widows (Lao PDR, 1995). On average, 25 percent of rural households are headed by women (IFAD, 1992). A study in Bolikhamxay Province found that 7.5% of households were headed by women (Ireson, 1989).²

Sex ratios by province indicate that in rural areas women outnumber men. More men than women have migrated to urban areas, leaving rural households short of male labour (Lao PDR, 1985). Recently, newly established factories in Vientiane draw on the labour of young women (Ireson, 1996).

Adult literacy of women and men (15-40 years) is estimated at 50 percent. Among the literate, 65 percent are men and 35 percent are women. This reflects the preference for schooling of boys and the practice that the girl child assists the mother in the household (UNICEF, 1987).

1.3 Farming System in Lao PDR

The dominant agricultural activity in Lao PDR is rice production, with most areas producing only a single annual rice crop. Glutinous, or sticky, rice, is grown on over 80% of the cultivated land;

² In Lao PDR, as elsewhere, different definitions of female-headed households are used. As a result, figures and data stated in various reports differ quite considerably and cannot be easily compared.

about one third is produced in uplands through slash-and-burn cultivation. Most Lao farmers subsist on wet season rice cultivation and have limited capacity to irrigate land for a second crop in the dry season. Apart from rice, rural households produce vegetables, sweet potato, tobacco, cassava and maize, and they tend fruit and banana trees.

While rice contributes fundamentally to the diet of the Lao population, the major sources of animal protein are cattle, buffalo, pigs, chickens, and fish. Wild animals are also important animal protein sources. These are hunted and gathered in forest areas. In addition to eating fish, rural Lao people eat many other aquatic resources such as eels, frogs, tadpole, crabs, insects, shrimps, etc. Many of these are foraged from water bodies and make up a considerable part of their daily diet.

1.4 Fish Production in Lao PDR

Increases in demand for animal protein are likely to occur throughout Lao over the coming decade because of increasing population. Fish are an important source of thiamine and riboflavin of the vitamin B complex. The health and nutritional status of the population could be enhanced through more regular consumption of fish. Fish culture is hence considered a viable activity by the government of Lao PDR for the enhancement of food security and income generation in Lao PDR.

Fish production through aquaculture activities in Lao can be increased through a number of different models. The different models and activities for aquaculture in Lao PDR include:

- Pond culture of fish
- Rice-cum-fish culture
- Hatchery production of fish fingerlings
- Private mini-hatchery development
- Private fish nursing and on-growing for sale

The Ministry of Agriculture and Forestry implements aquaculture development projects through its Department of Livestock and Fisheries. The Department of Livestock and Fisheries is the lead national agency for the formulation and implementation of fisheries policies supporting demand driven fisheries production. Emphasis is also placed on strengthening technical support services in the more rural and remote areas of the country. The government would like to encourage small farmers to participate in the development of aquaculture as an income generation activity. The LAO/97/007 project is nationally executed through the Fisheries Development Division within the Department of Livestock and Fisheries.

The Lao PDR government encourages aquaculture in order to:

1. Increase food security for farmers
2. Increase income generation opportunities for farmers

1.5 UNDP/FAO Aquaculture Development Project (LAO/97/007)

The current UNDP/FAO project (LAO/97/007) is targeting low-income fish farmers' groups in rural areas to contribute to food security through increased fish production from aquaculture.

The project aims to:

- extend fish culture to such farmers through farmers' groups
- develop a trainers pool at central, provincial and district levels well skilled in aquaculture technology;
- improve the technical and managerial capabilities of extension personnel at provincial and district levels;
- increase the supply of fish fry and fingerlings by improving production at provincial fish seed centre and expand the involvement of the local private sector; and
- work towards creating an enabling environment to make institutional credit more accessible to low income fish farmers.

These activities should involve both women and men fish farmers.

The present aquaculture project, LAO/97/007, builds upon the results achieved by earlier UNDP-funded and FAO executed aquaculture projects (LAO/78/014, LAO/82/014 and LAO/89/003). The last project (LAO/89/003) before the current one (LAO/97/007) aimed to disseminate suitable scientific aquaculture technologies to farmers to improve their traditional methods and in turn improve their nutritional level and family income.

1.6 Gender and agriculture in Lao PDR

According to the 1985 population census 54% of the people employed in the agricultural sector are women. Women took over traditional roles of men in the farming system, such as ploughing, during the war period and this has in some areas continued to the present time. In addition, women are responsible for marketing the agricultural produce in local markets.

In comparison to women in other Asian countries, Lao women enjoy good opportunities for access to and control over **land** resources, both legally and customarily. Well over 50 percent of the women, especially in the Lao Loum ethnic group, live in areas which have strong matrifocal and matrilocal traditions, including female land inheritance. Any property acquired during marriage is regarded as joint property of husband and wife.

Traditionally, men plough, make bunds and prepare seedbeds, and women do more than half of the transplanting of rice, weeding, harvesting, threshing and post-harvest operations. In some areas the traditional task division has changed due to lack of male labour. Women are increasingly involved in land preparation, irrigation and preparing bunds and seedbeds.

Apart from rice, rural households produce vegetables, sweet potato, tobacco, cassava and maize, and they tend fruit and banana trees. In general for these crops, men do the land preparation, ploughing and fencing. Women do the weeding, inter-cultural operations and marketing. But, men and women jointly plant, put manure, irrigate and harvest (Schenk-Sandbergen, 1995).

A number of studies have been conducted on the impact of irrigation projects on the position of women farmers (Schenk-Sandbergen, 1995; MIP, 1991). Other studies have presented an analysis of gender issues in forestry and highland agriculture (Ireson, 1989 and 1992; Brown, 1991; Hakangard, 1990) So far, there have been very few studies on the role of Lao women in fisheries.

Gender sensitisation and gender training activities are relatively new in development projects in Lao PDR. Some projects that have conducted gender training activities include: Mekong Irrigation Programme (MIP), the Sustainable Irrigated Agriculture Project (SIRAP), and the Farmer Irrigated Agriculture Project (FIAT). An NGO, CIDSE has been involved in gender training in Lao PDR since 1993.

2. METHODOLOGY

The collection of information and data for this study was carried out by a team consisting of an international consultant and a national consultant. Technical backstopping was provided by the FAO Aquaculture Development Advisor and the National Project Director at the Department of Livestock and Fisheries. This chapter explains more in detail the research methodology.

2.1 Choices and Objectives of the Study

Research area

The study focused on five provinces: Xieng Khouang, Oudomxay, Sayaboury, Savannakhet and Luang Prabang. In each province the team visited two districts. In most provinces the team also visited individuals engaged in fish farming activities, the provincial state hatchery and the provincial Agricultural Promotion Bank.

Research Sample

The study primarily focused on women and men farmers involved in aquaculture activities. In each province two villages were chosen, one village close to a main market and another village in a more remote location. The villages were chosen to be broadly representative of farmer's groups/individuals, that are involved in the UNDP/FAO LAO/97/007 project, as well as other farmers engaged in aquaculture. The groups chosen were mainly involved in pond based aquaculture activities. Some of the groups were involved in rice-fish production systems in lowland irrigated wet rice production systems. Some farmers were involved in fingerling production (mini-hatcheries).

An attempt was made to include representatives from the three broad ethnic categories of Lao Loum, Lao Theung and Lao Soung.

Key personnel in Vientiane and in each province and district were interviewed. Relevant institutions such as the Lao Women's Union (LWU) and the Agriculture Promotion Bank were also interviewed. The team also met with fish vendors in local markets in three provinces.

Objectives

The objectives of the study were to:

- Analyse the socio-economic and gender issues in Lao PDR aquaculture, from preparation of fishponds to production including marketing, processing, access to credit, control over income, family health and nutrition, etc.
- Make appropriate and practical recommendations that could be applied by the project LAO/97/007, respecting the technological, socio-economic and cultural conditions of Lao PDR.

2.2 Research Methods

The methods used in the study were Focus Group Discussions and Key Informant Interviews.

Focus Group Discussion

Focus Group Discussion is one of the methods used in Participatory Rural Appraisal (PRA). The members of each focus group discussed aquaculture among themselves with the help of an outside facilitator and in the presence of one or more outside observers. The focus groups consisted of small groups of farmers that were raising fish in the community or involved in the fish farmers group set up by the LAO/97/007 project. These groups varied from between three to fifteen people, with an average group size of approximately seven.

An attempt was made to conduct the group discussion with no sense of formality or hierarchy. The first task of the team was to establish a friendly atmosphere, introducing the facilitators, and providing background information on the purpose of the visit and focus group discussion. The team then explained the general purpose of the meeting, emphasising that the group's help is required to ensure the LAO/97/007 project meets their needs. The team tried to avoid building any unrealistic expectations about the project. A list of prepared questions were used as a guide for the discussions that followed. Additional probing questions were asked as appropriate.

The team attempted to segregate the focus groups by sex in most villages visited, i.e. one male and one female group. It was observed that in villages where there were mixed focus groups, men tended to dominate the discussion or corrected the women when the women intervened. It thus appeared difficult to organise mixed focus group discussions in which women had equal opportunities to participate and contribute.

Key Informant Interviews

Semi-structured interviews were conducted with key informants: selected stakeholders to the project who had a particular knowledge of aquaculture and gender issues. For this purpose a list of questions was prepared.

The key informants included the head man in each village, the LWU representative, the provincial and district project counterparts, staff from the provincial state hatcheries, the central project staff, the manager of the provincial Agricultural Promotion Bank, the Central LWU, fish vendors and various Non-Governmental Organisations working in the regions or working with aquaculture.

2.3 Concepts and Tools

Socio-economic and Gender Analysis (SEAGA)

The methodology employed in this study was based on a "systems" approach whereby the dynamics of the household were examined as a whole. The study thus not only focused on aquaculture, but on linkages between aquaculture and other farming activities. This was necessary in order to determine how both women and men view the importance and efficiency of aquaculture production in their village. The intention was to obtain qualitative information on farmers' attitudes, perceptions, and opinions, including both their positive and negative experiences to identify opportunities and constraints to raising fish from the farmers' perspective.

This methodology followed the concepts outlined in the FAO Socio-Economic and Gender Analysis (SEAGA) Framework (FAO, 1998). SEAGA is a holistic approach to development based on an analysis of the socio-economic factors and participatory identification of women's and men's priorities and potentials. The SEAGA framework distinguishes three different levels: field level (household and community), intermediate level (structures, institutions) and macro level (legal and national and international policy). The SEAGA framework was adapted to the aquaculture context, using existing operational guidelines for incorporation of gender in aquaculture projects (European Commission, 1994 and Seki E. et al., 1994).

Gender

Gender refers not to women or men per se, but to the social relations between them that define their roles. Gender roles are therefore not determined biologically, but are constructed socially and can differ between cultures and environments. As a central organising factor in communities, gender roles have a major impact on production, consumption and distribution in aquaculture.

2.4 Limitations to study.

There were two main limitations to this study identified by the team (i) time and (ii) composition of focus groups.

Time was a limitation to conduct this in-depth participatory study. Accessing information from farmers and cross-correlating information across villages and regions turned out to be difficult in a limited time frame. Also, contact with farmers groups was limited to maximum one day.

Second, lack of control over who attended the focus group meetings was a limitation. In particular, lack of control over the socio-economic position of those who participate in these groups may have led to a bias in the findings. The groups were often dominated by farmers who had access to enough land and labour to actively participate in aquaculture activities. The experience with mixed female/male groups was that the discussion tended to be dominated by the men.

3. FISH AND AQUACULTURE IN LAO PDR

3.1 Fish in the Lao PDR diet

Traditional Lao dishes in rural areas have been considered to be of low nutritive quality. The basic Lao meal consists of glutinous rice and a small portion of vegetables or green leaves, meat or fish. The risk of nutritional deficiency due to seasonal food shortages is highest in the period April – October in the south, and February – June in the north of the country (National Committee for Planning and Co-operation, 1995). Although most people like eating fish, they seemed to be unaware of any nutritional advantages to including fish in their diet. Some people of Lao Theung ethnic group, although they do like fish, particularly indigenous fish, still prefer meat. They would hardly ever buy fish due to its higher price relative to meat and in their culture they serve guests meat rather than fish.

Lao people often prefer wild rather than domestic meat and fish. Carnivorous fish such as catfish and snakehead are very popular but expensive to buy.

Traditionally, people in Lao PDR like to offer fish to guests in their home. Fish is also eaten during celebrations such as weddings and particularly during the Lao New Year in April.

Conservation of fresh food is a problem in Lao due to the lack of a cold storage and transportation facilities. Therefore, most fish is eaten fresh. Most Lao Loum women make “pa dek” prepared by fermenting fish into a fish sauce. Traditional fish drying and processing techniques are also practised. These could be further promoted as an integral part of aquaculture activities to ensure a more stable supply of fish protein during food deficit periods.

3.2 Traditional aquaculture practices in Lao PDR

In Lao PDR, fish culture among low-income farmer groups is practised using traditional practices. In practice farmers often raise fish by just putting fish in a water body. They do not deliberately feed them, control stocking rates, manage water supply nor select brood stock.

A farmer in Xieng Khouang province explained his method of farming fish. He puts about 300-400 Tilapia or common carp fish fingerlings in his rice field. He catches the fish in home made bamboo cages when draining the water out of the rice field. He selects the biggest fish and moves these as brood stock to a pond for spawning.

In the case of common carp many farmers use a traditional technique for breeding. Common carp will spawn on the roots of a plant that has fine hairs on the root tendrils. Alternatively substitutes, such as plastic string, are sometimes placed in the pond to stimulate spawning. After spawning, the root of the plant or the substitute is moved into a cage in the pond. When the eggs hatch the fry are fed on a daily basis. Fish that are cultured in this traditional manner are harvested after about three months. At that moment they are of “hand-size”, which is about 200 grams and are consumed at that size.

The existing traditional fish culture practices that are employed in some provinces provide a good example of low risk, low input aquaculture. Farmers modify modern aquaculture techniques to suit local conditions and their production constraints and risks.

3.3 Scope for Improved Aquaculture

A major question regarding the LAO/97/007 project is whether farmers raise fish to increase their food security or income, or both.

According to staff of the Fisheries and Livestock department the interest in growing fish has expanded since 1995, because:

- The catch from natural fish is decreasing
- The price of fish in the market is increasing – the price of fish is now higher than meat
- There is a lack of supply of fish in the market – supply of fish is less than the demand.

Overall in Lao PDR the catch from capture fisheries is declining. In some areas the decrease in wild fish in natural water bodies has been attributed to over-fishing and the use of explosives to catch fish. In other areas, a decline of indigenous fish in rice fields was reported, which may be caused by agricultural practices, such as water control or pesticide use.

The demand for fish, particularly locally produced fish, exceeded supply at the time of study. This is reflected in a higher price of fish compared to meat, with the price of fish being up to 50 percent higher per kilo than the price of beef in some areas. Most people prefer to eat locally produced fish over fish imported from Vientiane and Thailand. This presents an opportunity for village based fish production, that does not require an extensive or expensive marketing and distribution system.

For example in the villages visited in Xieng Khouang province people were interested in fish as they can get a good price for fish (relative to meat) and fish can also be used for household consumption. Interest in cultivating fish increased when women observed the high price of fish in the market.

In conclusion, fish are being produced primarily for household consumption in most areas and are only raised for income when production exceeds household consumption. There are isolated examples of fish rearing exclusively for income generation but these are mainly in food secure households.

Aquaculture for Income Generation

A family settled in a village in Oudomxay province in 1993, because the husband was employed by the state in the area. They were allocated some land to grow rice. This land could be gradually bought off from the government at a subsidised rate, which they had done by mid 1998.

Their land is located near a main road, and has a supply of water all year round. However, they discovered that the land is not very suitable for growing rice, because the soil is acidic. In the first year they lived in the village, their rice yield was poor and not enough to feed the family. The family's food security was threatened because the husband's salary was not sufficient to feed the family.

The husband met a friend who had a fishpond on his land, and his friend told him about the possibilities of growing fish instead of rice. He discussed the proposal carefully with his wife, and they calculated the profitability of investing in fish culture. They decided that as their land had water all year around, they might be able to farm fish successfully and harvest fish twice a year. The couple together decided that they that they would try to raise fish for one year initially. They used their savings to hire a bulldozer to dig the pond. It cost them around 270,000 Kip to dig the pond. That year they successfully harvested 300,000 Kip worth of fish and decided to continue fish farming. By 1995 they converted the rest of the land to fishponds and, except one year when they overstocked, they have been successful in their fish farming. By 1997 they were able to make 831,000 Kip annually from the sale of fish harvested.

In this case, the woman has the main responsibility for and knowledge of raising fish. Fish farming is not the sole income of the family, as the husband works in a state run fuel station, and the wife also sells vegetables and small livestock.

3.4 Recommendations for project design

- Promotion of the nutritional values of fish consumption could help to improve health through an improved diet.
- Traditional fish drying and processing techniques could be promoted to ensure a more stable supply of fish protein during food deficit periods.
- Traditional fish culture practices provide examples of how farmers modify modern aquaculture techniques to suit local conditions and their production constraints and risks.

4. CONSTRAINTS TO ENGAGE IN AQUACULTURE

On the basis of the focus group discussions and key informant interviews the following constraints have been identified at the village and institutional level that limit farmers' ability to engage in aquaculture.

4.1 Resources Constraints

The majority of members of the fish farming groups come from relative wealthy sections of the society. This because one needs a minimum access to resources, such as land, water and capital to be able to engage in fish farming.

Access to land

For the majority of the farmers and farmer groups in this study, access to land for rice production did not appear to be an issue, yet for many access to land was a constraining factor for engaging in aquaculture. Not having enough space on their land for fishponds was a major reason why people were not able to involve in fish farming.

Access to water

Ideally, a supply of water all year around is needed to culture fish. This is particularly important if farmers are to hold their own brood stock over the dry season and produce their own fish fry. In many provinces in Lao, particularly the low lands, the dry season can be up to 6 months long. As there is often little or no rain during this period, access to water is essential.

Permanent sources of water include rivers/stream, irrigation schemes and large water bodies. Many villages do not have a constant adequate supply of water in the dry season. Even within a village, not all families have access to a steady supply of water all year round. Families within villages, which have more access to water, are at an advantage in terms of engaging in aquaculture activities.

Within villages and within households there can be conflicting demands for access to water. For instance, water use for raising fish can come in conflict with the use of water for irrigation, the watering of livestock or drinking water.

In Savannakhet province a community managed water body, was used for raising fish as well as for irrigation purposes. 1998 had been a particularly dry year, and there was a lack of water. In order for the fish to survive they would have to restrict the use of water for irrigation purposes. As this would have lead to crop damage, this may have created conflict in the village. A water users committee is responsible for managing the water body and is comprised of representatives from different levels in the community. It is hoped that a compromise has been reached in time.

Access to Capital and Credit

Many farmers do not have the funds to construct fish ponds. It can cost between 80,000 to 130,000 Kip per hour to hire a bulldozer and it takes between 4-8 hours to dig a pond using a

bulldozer. Total costs are thus between 320,000 and 1,040,000 Kip (91 to 297 US \$). Farm households thus need to have savings or have access to a loan to be able to invest this money. In addition, the farmer households need money to buy fingerlings to stock the pond.

Access to credit may be a major factor constraining increased farmer involvement in aquaculture activities. The main source of credit is the Agricultural Promotion Bank (APB), a specialised, government-owned lending institution that was created in 1993 by the government.

The Lao government encourages lending to rural women as well as men. Yet access to formal banking is considered to be more complicated for women than for men often because of illiteracy and socio-cultural constraints. One reason is that most loan officers servicing village clients are men, and most loans are issued to men (UNICEF, 1996). If a woman wishes to borrow a larger sum of money, she also needs her husband's signature.

Poorer farmers are likely to have less access to credit or knowledge about formal credit channels.

4.2 Technical Constraints

A wide range of technical constraints were identified by both women and men farmers and provincial/district staff. Many of the constraints identified were similar in different provinces and districts. The following presents a summary of the technical constraints identified.

1. In mountainous regions there is not much flat land and therefore there is not much space for fishponds.
2. There is a lack of fish fry/fingerlings in some regions.
3. The low quality of the fry/fingerlings, many imported from China, Vietnam and Thailand, with farmers sometimes being tricked into buying "small" fish called "Sieuw" that do not grow any larger.
4. Lack of knowledge about the best techniques to grow fish.
5. The quality of the water in some districts is not good.
6. Draining and cleaning the ponds is a very new concept to the farmers. In some areas it is very difficult to drain the ponds, and water pumps are necessary, but often there is a lack of water pumps.
7. Farmers consider nylon nets for nursery cages as expensive. Instead, farmers substituted cheaper cotton nets for nylon nets and in some cases the cotton nets rotted or rats ate through the net.
8. During the rainy season there is in some areas a risk of flooding or overflowing of the pond and thus loss of fish.
9. Animals such as snake, birds and eels eat fish from the rice field.

A successful woman fish farmer in Xay district, outlined what she felt was the major constraint for her. During the rainy season she has to monitor the water in the pond very carefully to avoid overflowing. In fact, at night time, if it rains heavily, both she and her husband often have to get up to check the walls of the pond, and the screen near the overflow pipe. Although physically not very heavy work, she said that the work requires a great deal of attention and care.

4.3 Social Constraints

The location of both water and land resources in relation to the household can have an impact on women's ability to engage in aquaculture. In rural Lao PDR aquaculture is considered as a household activity, which can easily be incorporated in the existing farming practices. Extension advice on the selection of the pond site is often only based on technical factors like the suitability of the soil and the availability of water. However, the distance from the house of the farmer family affects the time needed for daily feeding and pond management. As these tasks are mostly performed by women, distance should be taken into account.

One particular constraint is that women of childbearing years are often less mobile than other women and men. In Lao PDR women often become pregnant shortly after weaning their youngest child (Ireson, 1996). This affects their mobility in terms of being able to travel to fishponds or rice fields that are not located near the home.

Theft from ponds was mentioned in some areas as a major constraint. Specifically, theft of fish from paddy fields or ponds that are not located near the house was considered a problem. The tradition of free access for capturing fish in paddy fields still continues, even if it concerns cultured fish.

4.4 Economic and commercial constraints

Cost of digging and construction of ponds

The constraint that was voiced repeatedly by farmers in all provinces was the high cost of digging a pond or by bulldozer. The alternative is to dig the pond manually, using family labour or hired labour. Some ethnic groups like the Lao Soung exchange labour and also fish farming groups formed under the LAO/97/007 project may encourage people to exchange labour.

When ponds are dug by manual labour, they may often not be deep enough. This is not a problem in the cooler climate in provinces such as Xieng Khouang, but is a constraint for raising healthy fish in warmer provinces such as Sayaboury.

Investment and Risks

In Lao, the current systems of raising fish generally involves minimal investment. Although both women and men farmers expressed strong interest in growing fish, they are not prepared to invest money in what they perceive as a high risk venture geared towards income generation unless they first see a successful fish farm demonstrated by other farmers.

The relative high initial investment costs of entering into aquaculture are a key constraint, especially for low-income families. Borrowing money to dig a fishpond is not an attractive financial proposition for most low-income farmers.

Both women and men need to be convinced about the economic advantages of raising fish. Especially in low land Lao Loum societies, women control the cash income. Although, decisions on how to spend or invest large sums of money are usually jointly taken by husband and wife, decisions about purchases up to 30,000 Kip are exclusively made by women, e.g. the purchase of fingerlings.

4.5 Institutional constraints – aquaculture extension

Extension agents undertake aquaculture extension activities under the Livestock and Fisheries Section of the Provincial Agriculture and Forestry Office. This means they must divide their time between both fisheries and livestock. Livestock production is a major priority for most extension staff. Vaccination programmes to curb major livestock diseases are one of the big priorities in many provinces.

In addition, there are a limited number of specialised fisheries staff posted at the provincial and district levels. The majority of extension officers have received most of their training in animal husbandry, rather than in aquaculture. However, in the regions where the provincial and district staff was involved in the previous aquaculture project, the aquaculture knowledge of extension agents has increased.

In general, an important constraint is that the provinces do not have enough extension staff. Therefore the extension staff have to divide their attention over a number of projects and activities. Therefore, district staff and extension staff complain of high workloads.

There are no plans or funds at present for the government to increase the number of extension staff in the provinces. Some women and men farmers suggested that it would be a good idea to have more women extension agents visiting villages for training of women farmers. At the moment, the number of female extension agents is very limited.

4.6 Recommendations for project design

It is recommended to take the above mentioned constraints into account in planning activities and other interventions to enhance the production of fish in Lao PDR. For example:

- Realise that women are not a homogenous group, and some women are more constrained in their mobility and time availability than others, esp. women with young children;
- It is important to explain to both women and men farmers the cost implications of engaging in different types of aquaculture;
- In organising farmer to farmer study tours and extension activities ensure that both women and men farmers are involved.
- Improve the extension on rice-cum-fish culture to involve more lower income farmers.
- Whenever possible use women extension agents to train and advise women farmers in aquaculture.

5. OPPORTUNITIES TO ENGAGE IN AQUACULTURE

On the basis of the focus group discussions and key informant interviews the following opportunities have been identified at the village and institutional level that encourage farmers to engage in aquaculture.

5.1 High demand for fish

In Lao PDR, the overall demand for fish exceeds the supply from domestic production. At present, there are no constraints to marketing fish except access to markets, because of poor road networks in rural areas.

In addition, people favour domestic fish over imported Thai fish as well as fish from other regions in Lao PDR. This preference for locally produced fish presents an opportunity for village based fish production, without the need for an expensive marketing and distribution system.

In Oudomxay province fingerlings are only available at the state hatchery in the nearby province of Luang Prabang. One woman farmer travelled about 6 hours by car to the Luang Prabang hatchery to buy 100,000 Kip worth of fingerling. She subsequently successfully raised to table size, and sold the fish for 1.2 million Kip. When she wanted to buy her next supply of fingerlings, she was able to afford to fly from Oudomxay to Luang Prabang.

5.2 Farmers' perception of aquaculture

Most farmers appear very enthusiastic and positive about rearing fish. Many farmers are already involved in raising fish in a "traditional way", and are keen to learn new techniques and methods to increase their yields. Raising fish is not considered as "foreign" because people have always collected fish and other aquatic animals from their rice fields and other water bodies.

5.3 Women's Interest

Apart from the initial labour and/or financial cost of digging a pond, many women consider cultivating fish as an activity that they could easily be involved in and an activity that easily fits into their other daily household tasks. For instance a Lao Theung woman in Phiang district in Sayaboury said that "women too can raise fish, you just need to feed them twice a day".

Women commented that they have access to adequate supplies of rice bran to feed fish and there is no problem finding manure in their village for fertilising the ponds. Raising fish is considered lighter work than raising other livestock, because for livestock you have to plant crops for feeding them, such as corn for pigs, but for fish you do not have to plant a special crop.

Women in Xieng Khouang province said that initially they thought raising fish was a men's activity. When asked why, they said it was because nobody ever came and talked to the women about fish rearing.

5.5 Opportunities for engaging in mini-hatchery

Because of the benefits of raising table-sized fish from fingerlings, there is widespread demand for fingerlings. This demand is often met through import of fingerlings from neighbouring countries. Fingerling mortality rates are high and quality is often not guaranteed for imported fingerlings.

Because of such supply problems there is a potential for mini-hatchery production of fingerlings for sale to farmers at the local level. In addition, all farmers appear to favour locally produced fingerlings over imported ones.

Farmers who have experience in raising fingerlings and selling them at table size may be potentially ready to engage in mini-hatchery training.

5.6 Institutional opportunities

The LAO/97/007 project extends and supports aquaculture activities in five provinces. In some provinces the experience and the capacity among LAO/97/007 project staff is greater than others. The project counterpart in each province has been given opportunities through training to upgrade their knowledge on aquaculture.

Aquaculture in Savannakhet province is more established than in other provinces. Yields are also higher, in particular in areas with access to irrigation. The difference may be explained by the fact that general income level is higher, that the previous LAO/89/003 aquaculture project worked with model farmers in this province and that there is an Asian Institute of Technology (AIT) capacity building project located in the provincial Livestock and Fisheries Department.

5.7 Recommendations for project design

It is recommended to take the above mentioned opportunities into account in planning activities and other interventions to enhance the production of fish in Lao PDR. For example:

- When identifying participants for further training, particularly for training in mini-hatchery, ensure that women and men who have already experience in raising table-sized fish from fingerlings are chosen;
- Highlight the potential income earning opportunity of fish production through existing extension channels, NGOs, the LWU and other relevant organisations;
- Highlight the relatively low labour demands of fish production once a pond has been constructed;
- Encourage both interested women and men to visit model mini-hatcheries to learn about the operation of mini-hatcheries, and ensure that interested women also attend workshops on mini-hatcheries.

6. GENDER ROLES AND THE DIVISION OF LABOUR

6.1 Gender division of labour

This study compiled information on the total workload of women and men, focusing more in-depth on the division of labour in aquaculture. The objective was to identify constraints in labour allocation that may be important for designing project activities.

The gender division of labour

- The gender division of labour in any culture is not static;
- The introduction of new techniques and technologies often result in a change of the division of labour;
- Therefore the gender division of labour is an important consideration in introducing any new activity or technology.

The National Union of Lao Women estimates that in rural areas women work two hours per day more than men (LWU, 1995). Their work includes production tasks, as well as household and child care chores (Ireson, 1996).

The gender division of labour in Lao PDR tends to be strictly divided between women and men among Lao Theung and Lao Soung ethnic groups. Among the Lao Loum, many tasks are shared between women and men, reflecting the relative high status of Lao Loum women in comparison to women of other ethnic groups.

Lao Soung

Among the Lao Soung, men's labour includes looking after big animals – buffalo and cattle, cutting trees, ploughing and marketing agricultural produce in nearby villages or towns. Women do everything else, from raising children to raising small animals to working in the upland rice fields. During the rice planting season women work and stay in upland areas for days at a time. Sometimes men take care of small children at home.

According to the Lao Soung men, aquaculture is clearly a women's job, particularly as they viewed raising fish as a task primarily for household consumption.

Lao Loum

Among the Lao Loum many tasks are shared between women and men and thus overlap for a great deal. Overall Lao Loum consider that ploughing is usually done by a man and planting is a woman's job. All activities from harvesting onwards are women's responsibility. This includes milling, pounding, processing and anything to do with the preparation of food and cooking. In the dry season, men cut bamboo for weaving the house walls. While women are responsible for growing vegetables and herbs for the household and for selling, men construct fences for the garden.

Lao Loum	
Wet Season	
Women's activities	Men's activities
<ul style="list-style-type: none"> • Preparing soil in the rice field • Directing the water flow to the rice field, • Ploughing (if there is no man in the household), • Fixing the ridges between the rice fields • Preparing the rice nursery and transplanting the rice seedlings • Putting manure on the land • Maintaining the water level in the field • Weaving • Raising small livestock • Vegetable gardening for the household • Raising children • Cooking for the household 	<ul style="list-style-type: none"> • Maintaining the community irrigation scheme • Preparing irrigation channels • Ploughing and Harrowing • Choosing and preparing varieties of rice • Helping women transplanting • Putting manure on the land • Water management • Making fences to protect paddy from buffalo • Cutting bamboo and preparing sting for bunds • Raising large animals – cows and buffalo • Repairing house and livestock shelters •

Lao Loum	
Dry Season	
Women's activities	Men's activities
<ul style="list-style-type: none"> • Harvesting the paddy • Threshing • Carrying rice to storage • Planting vegetables (chillies, onions, garlic) • Cutting grass for livestock feed • Collecting firewood • Weaving • Raising small animals, chickens, pigs, ducks • Raising children • Cooking for the household 	<ul style="list-style-type: none"> • Harvesting the paddy • Preparing 'everything' to ensure the rice's storage • Looking after cows and buffalo • Maintaining the community irrigation canal and the canal to their fields • Cutting grass for livestock feed • If planting a dry season crop, ploughing in January • Moving fish from the pond to the rice field • Cleaning and preparing fishponds (March) • Moving fish from rice paddy to fishpond

It is evident from the above that during the wet season there is a heavier workload for both women and men.

Lao Theung

Among Lao Theung, women and girls are mainly responsible for cooking, household maintenance, water carrying, forest gathering, and care of small domestic animals. They also transplant rice and weed crops. Men and older boys are mainly responsible for care of buffalo and oxen, hunting and ploughing the paddy and clearing the fields. Lao Theung women are also responsible for harvesting rice, but their husbands help.

6.2 Age differences in labour allocation

Apart from the division of labour among women and men, seasonal patterns and variations among ethnic groups, different age groups undertake separate tasks. In Lao there is a high respect for older people and often the younger generation takes over the heavy work, for example in transplanting and harvesting rice. Older women often look after young children while other people work in the fields.

Children are an important source of labour for rural families. Usually the daughter helps around the house, preparing food and fetching water. Boys are responsible for looking after the buffaloes, including washing and feeding them. Foraging for fish in natural waters and foraging for other wild food such as mushrooms, bamboo shoots, etc. is done by women, but both sons and daughters also help.

6.3 Gender division of labour in aquaculture

In Lao PDR, aquaculture is part of the farming system along with other agricultural and animal husbandry activities. Men and women usually share tasks and responsibilities in aquaculture production. Some patterns could be identified of activities that were predominantly carried out by women and others that were predominantly done by men.

Pond site selection and construction

Men usually select the site for pond construction and perform tasks such as digging, pond clearance and repair. In some cases the entire family helps in digging a pond. Where ponds are integrated with small livestock, men generally construct the pens over the pond.

Buying fingerlings

When buying fingerlings, recognising the quality of fingerlings and the species of fingerlings is a difficult task. Whether it is men or women farmers who buy fingerlings depends on the location of the village. If villagers have to travel far to a district or provincial area to buy fingerlings, it is mostly a man's responsibility. In households where women control the cash, purchases of the fingerlings are either made by women themselves or purchases by men require women's agreement for such expenditure. When traders with fingerlings visit the village, it can be either men or women that buy them.

Pond fertilisation, maintenance and feeding the fish

If a family lives close to the fish pond, both women and children are responsible for pond fertilisation and daily activities like the collection of household waste and animal manure for composting, water management and the feeding of the fish.

Generally, men are responsible for pond preparation, pond weeding, drying or draining and the regulation of water entry into pond prior to stocking, although women often help. Liming the pond (when done) is the responsibility of men. Men generally operate pump or pond gate operations and other water management practices.

In general, women usually prepare feed for fish, such as collecting rice bran, grass and any other available vegetable wastes that are fed to fish. No farmers interviewed in the study purchased formulated feed.

The pond location appears to be a critical deciding factor on who feeds the fish. In villages where the ponds tend to be far away from the household women are less likely to feed the fish. If the pond is located near the household, feeding the fish fits easier into women's other daily routine work such as feeding poultry and other small animals.

In Sayaboury province fishponds are located 25 minutes walk from the village, at the same location where upland rice is cultivated. The responsibility to fertilise the pond, to manage water and to feed the fish lies with who happens to be going that direction from the household, whether the men are ploughing, or whether the women are planting, weeding or harvesting.

Fish Harvesting

Most fish can be harvested and eaten when they are hand sized, about 200 grams each. Although most women harvest for daily/weekly family consumption, any overall major harvest of fish is under the control of men. When a large batch of fish is to be harvested from a pond using cast nets, this is considered a man's responsibility. In rice-cum-fish production, draining water from the rice field is a man's responsibility, while both women and men collect and harvest fish from the fields.

Fish marketing

Most villagers are not engaged in selling of fish for income because they did not have a surplus of fish production. Selling of surplus fish for most farmers is largely ad hoc and considered an added benefit.

Women are the sellers, buyers, traders, middle-women and often the entrepreneurs regarding table-sized fish. In Lao Loum households, women control the income generated from sale of fish, which is used for purchasing household items. The larger part of the fish production is usually sold at the pond site. While some villages have easier access to local urban markets and to traders, on site selling of fish is also a viable option and very common.

In Savannakhet province, villagers said that if someone is thinking of harvesting his/her fish, they let others in the village know in advance and buyers accumulate around their pond. The woman in the house checks the price in the local market and decides a fair price for their fish.

If there is surplus fish to sell from the villages it is sold to middle-women (traders) from the district town who travel by motorbike in the district calling on the villages where they know they can buy fish. Farmers will only travel to the provincial capital to sell fish if they have other produce to sell as well.

6.4 Recommendations for project design

The division of labour indicates that fish farming knowledge and experience differs between men and women. It is recommended to take this into account in choosing the participants for

future extension activities and other interventions to enhance the production of fish in Lao PDR. For example:

- A programme to improve feeding practices and to reduce post harvest losses should be aimed at women;
- Activities to encourage people to dig or prepare deeper ponds should be aimed at men;
- As both women and men buy fingerling, both need to be able to identify fingerlings that are suitable for purchase in order to avoid buying low grade or unsuitable fingerlings;
- Training and support with respect to processing, distribution of fish and the management of aquaculture enterprises could best involve women.

7. COMMUNITY AND HOUSEHOLD DECISION MAKING PROCESSES

7.1 Community decision making processes

In Lao PDR a clear division exists between the public and private spheres for men and women. Men generally speak for the household and are elected or seconded to positions of authority within village social and political organisations. Women are confined to the private, domestic sphere, except for the important economic activity of trading (Evans, 1995).

In a village with a community pond in Savannakhet province decisions regarding how the money earned from the sale of fish are made at village meetings. The LWU representative for the village is on the committee as are the elders from the village, the village head man, and the monk from the temple. The money earned had been spent on various community based projects such as building a road in the village, building a temple, paying dues towards national soldier day and getting access for the village to electricity. These had been suggestions from the men. Women had not voiced their priorities and needs. For instance, a better village health centre was identified by the women as something that their families badly needed in the village in view of a very high infant mortality rate.

The major reasons mentioned by women why they do not participate actively in front of men, are:

- The Lao culture and history of women's position in society
- Women are not used to speaking out publicly
- Lack of confidence: women feel they do not have information to sound knowledgeable about issues

This is not to say that women do not agree with the community decisions, but the potential is there for women's priorities to be overlooked.

7.2 Household decision making processes

Overall in Lao PDR household members share the responsibility to secure welfare for their families and they generally pool the family income.

Women may control the cash and expenditures, although there are quite some differences between the different groups.

Among the lowland Lao Loum, management of cash is exclusively the domain of the women up to certain levels of expenditure. In selling and purchasing expensive items, such as production equipment or buffaloes, men usually decide in consultation with their wives.

In Lao Theung households, men are in charge of decisions about money. Lao Theung men sell most things (in 80-90% of households), although women do sell certain non-wood forest

products. Although men make the decisions about money, in certain circumstances they would discuss such decisions first with their wives.

At household level, even when it is stated that men make the decisions in a household, women do have the power to influence men. For instance, if women are convinced that investing in fish culture is a viable option, they can motivate their husbands regarding investment in fish farming.

7.3 Recommendations for project design

It is recommended to take community and household decision making patterns into account in planning activities and other interventions to enhance the production of fish in Lao PDR. For example:

- Because Lao Loum women control household cash and expenditure for smaller items they have to be convinced of the benefits to be derived from investments in aquaculture inputs, e.g. netting, fingerlings, etc. Conversely, decisions about large expenditures tend to be in the domain of men but are often made jointly. Hence, information on large investments, such as pond construction, has to be made available to both men and women.
- Although women make important decisions within the household, they may not be as willing to voice their opinions in public decision making processes. Nevertheless, it is important to seek women's inputs and opinions in important community decision processes as they may have different needs and priorities.
- Ensure that women are included in information on forthcoming aquaculture activities so that they can be more prepared to voice their opinions and needs. This could be done through the provincial LWU office, and channelled through the LWU district and village representatives.

8 SELECTION OF VILLAGES AND GROUP MEMBERS

8.1 Selection of LAO/97/007 project target villages

Selection criteria for LAO/97/007 project target villages were not pre-defined by the FAO/UNDP project staff although broad guidelines were given. The provincial agriculture department largely determined the selection of project target villages. The provincial counterpart in the provincial agriculture department was informed of the project's commitment to targeting low income groups, women and ethnic groups, and asked to include this in their village selection criteria (LAO/97/007, 1998).

Villages were selected by the provincial agriculture department according to some or all of the following broad criteria (LAO/97/007, 1998):

- Accessible by road (usually major road)
- Some existing aquaculture activity
- Previous contact with the Livestock and Fisheries section
- Co-operative village head / villagers
- Special interest to the Province (i.e. resettlement village, targeted for development)
- Presence of irrigation schemes
- Close to, but not included in previous aquaculture projects.

8.2 Selection of group members

In the selected villages, fish farmer groups of up to 15 people were formed as the primary project target group. It was expected that such groups would reach a broader socio-economic group, give better opportunities to exchange and disseminate information and facilitate gaining easier access to institutional credit. One additional reason the project is trying to get the farmers to work in groups is to encourage people to help each other dig deeper and better ponds.

Selection of farmers for group formation differed between villages. The following guidelines were followed by provincial counterparts, who selected group members jointly with the village head man:

- Farmers with an interest in fish culture – this was largely determined during the preliminary household survey conducted at the commencement of the LAO/97/007 project.
- Farmers should be hard working (as defined by the village headman).
- Farmers from low-income groups that have access to resources for fish culture - land, money for inputs, water supply, etc. The area of pond or paddy should not be prone to catastrophic flooding or drying out, and should be accessible to the project staff (i.e. the pond should not be a days walk away from the village).
- Farmers should have some level of learning i.e. able to read or write. They should also be able to understand and accept the technical advice offered.
- Farmers should be willing to explain and promote the information to others.
- Farmers need to have some ideas on the marketing of fish.

Some farmers were initially concerned about the dynamics of working in groups. They said that working in-groups is difficult and often people do not work at the same level and pace. The project staff has to spend quite some time explaining the advantages of working in a group.

One group in Oudomxay province has worked hard at helping each other. For instance, one person received fry/fingerlings before he had finished digging his pond so another group member offered to let him leave his fry/fingerlings in her pond. He had used cotton netting in the other member's pond to nurse his fingerlings and the netting tore and his fry/fingerlings escaped into the main pond. However, the fish farming group decided that each member of the group would donate 10-25 fry each to him for his own pond.

In Xieng Khouang province the leader of a fish farmer group explained how the fish farmer group functioned. This group is made up of people from two villages. Although they have formed a fish-farming group they all work as individuals and take care of their own fish. The formation of the fish-farming group is for exchange of information and also for organisation purposes.

8.3 Women's participation in fish farmer groups

The eldest married male in the Lao domestic group is considered the head of the household. He is the spokesman for his family in the village and to the outside world. Single women, either widows or divorcees with children, are recognised by the community as legitimate heads of households (Ireson, 1996). This perception of household head has an influence on the composition of fish farmers groups. Although the male/female participation rate in the farmers groups is not fully known yet, the majority of the fish farmer groups that were encountered during this study were composed of men. Some groups also included one or two women.

It would appear that when LAO/97/007 project staff came to the village they tended not to state that whoever in the household was most interested in raising fish could attend and join the fish farmer group. Thus it was assumed that it should be the head of the household. In some cases project staff had explicitly said it should be the head of the household.

8.4 Recommendations for project design

It is recommended to take group member selection and functioning into account in planning activities and other interventions to enhance the production of fish in Lao PDR. For example:

- Encourage farmer to farmer training model for fish culture, including identifying and assisting women farmers to train other women farmers in their area.
- There is greater opportunity for integration of women farmers in the composition of fish farmer groups. As the interest of women farmers in aquaculture is quite large, there is scope to establish women fish farmer groups.
- Rural women vary considerably with respect to their interests, priorities and time available. Perhaps women with older children would be the most suitable group for initial aquaculture related activities, because they are less busy with children, they feel more confident, and both men and women in the village would respect them because of their age.
- In any future group formation process project staff should make it explicit that women as well as men farmers are eligible for consideration to be part of fish farmer groups.

9. AQUACULTURE TRAINING

9.1 LAO/97/007 project training activities to fish farming groups

A major project activity in 1998 involved the training of the farmers groups in aquaculture techniques. The training was to encourage basic low technology fish farming techniques to increase production. The training typically covered how to raise fish in ponds (including fertilising ponds, feeding, maintenance of ponds, harvesting), how to integrate fish culture with livestock, rice-cum-fish culture and simple fish breeding techniques. The farmers were also taught to keep records of the number of fish they got, daily feeding, and other activities.

9.2 Attendance of women in the LAO/97/007 project's aquaculture training

From field observations it was evident that the majority of the fish farmers groups were composed of men. It is thus expected that mainly men have attended the training sessions. For example in Oudomxay province, three district training workshops of farmers took place. Out of the total of 103 trainees, 14 were women. In Sayaboury province attendance by women was also low, which might have been partly be due to the fact that many of the women were busy transplanting and planting rice at the time of training.

Many women expressed considerable interest in raising fish, and perceived it as a women's role. Yet, they did not attend the training provided through the LAO/97/007 project. One of the reasons mentioned was that the project did not say that women could go to the training offered, or that there was no mention of women fish farmers when the project staff (men) first came. Another reason was that when something new comes to the village, the men want to know about it first. Some women also said that they were unable to attend the aquaculture training, as they had to take care of small children.

In many villages, women attended the training if the household was already cultivating fish and their husbands for one reason or another were unable to attend the training. The women then represented the family at the training.

Men that had been trained said that they would strongly support their wives to be trained in raising fish. However, some groups suggested that the women should be trained separately to the men, because when men and women are trained together the trainer focuses on the men, and the women are too shy to speak up. Other groups wanted the husband and wife to attend training together. Furthermore they suggested that if possible female extension staff should train women to raise fish.

9.3 Education levels and access to training.

Another reason for the low participation of women at training workshops is because they have a lower education level, and feel that they may not be able to take notes and follow technical knowledge. Literacy levels are low in many rural areas, with levels of women being significantly lower than levels of men. This is caused by the practice that girls are much less likely to attend school than boys. Parents rely on girls for daily labour more than boys (Ireson, 1996).

Literacy was not a condition for attending training. But many women thought they had to be literate to attend the training. Without being literate many women did not have the confidence to attend. This led to their self-exclusion from the aquaculture training.

9.4 The timing of training

The season in which the training takes place is also crucial. During the rainy season both women and men are busy ploughing land and transplanting rice. During the planting season, Lao Soung women may often stay in the uplands for days on end, so would not be available or have time to attend training in this busy season.

In most villages visited, both women and men said that training in January, February and March would be the most suitable for them. Many groups also mentioned July and August after the planting season as suitable. Although the farmers in the study recommended these months for training, this may be difficult for project staff to implement. This is because training has to fit in with the fish/fry life cycle. If training takes place too long before the farmers can practically implement what was covered at the training, they may have forgotten the techniques by the time they begin to practically implement them.

A further constraint to inclusion of women in training activities is at what time of the day training takes place. Fish breeding usually takes place during the night and involves managed activities up to and after midnight. As the training is thus mainly in the evening it may be less suitable for women, who may not feel comfortable mixing with men in the evening.

9.5 How women learn about raising fish.

From the above information it has become clear that very few women were able to attend formal training sessions. The reasons, as identified in this study, are summarised below:

Reasons given why women do not attend the training

- Lack of time
- Lack of confidence
- Women thought it was for male head of the household
- They did not realise that women could also attend
- Men like to be the first to find out about new things in the village
- Illiteracy
- Wrong season - there were busy planting/working
- Language for some ethnic groups

In some cases, women instead learned by following the second-hand instructions from their husband. It was remarked that this is not ideal, as one cannot be sure that the husband understood everything and relates everything. District staff admitted that they are not sure the male trainees bring back the correct message to the rest of the family.

9.6 Development of gender sensitive aquaculture extension materials

The existing aquaculture extension and training materials are to be revised (LAO/97/007, 1998). The materials available are under review, and the provincial counterparts will be encouraged to take part in the design of the new material. This is an excellent opportunity to ensure that the extension materials will take into consideration gender roles in relation to aquaculture.

The project is also about to produce a training video for use by extension staff, trainers and other interested organisations. It is important to ensure that women as well as men are represented in the video, and that women's role in aquaculture is reflected accurately.

9.7 Recommendations for project design

It is recommended to take experiences with training sessions into account in planning activities and other interventions to enhance the production of fish in Lao PDR.

The above constraints can be overcome through, for example:

- The majority of LAO/97/007 project staff are male and they tend to meet with and talk only to men in the village. Protocol requires that the village headman is consulted first. The project staff hence have to very clearly state that future project activities are for both women and men, explicitly specifying that women can also become involved in fish farming.
- The project should encourage the training and use of women extension officers whenever possible.
- If training in aquaculture is to be organised for women farmers, it would be important to state well in advance that they do not need to be able to read or write to attend
- Conduct a further survey in LAO/97/007 project villages to determine the viability of organising special training for women's groups.
- If feasible, organise fish farming training for women in January – March or July/August.
- Ensure that any new aquaculture extension materials developed are gender sensitive and incorporate the roles of both women and men.
- Develop guidelines for extension staff on involvement of women in aquaculture projects.

10. INSTITUTIONAL SUPPORT FOR WOMEN IN AQUACULTURE

10.1 Legal and institutional framework

In Lao, equal rights for women and men are accorded by the law and clearly stated in the Constitution under Articles 7, 8, 20, 22, and 27 (LWU, 1995). In practice the understanding and implementation of such gender rights is still very limited.

There is a shortage of women with technical skills in Lao. According to the LWU, even those with technical skills have not been given opportunities for advancement and may face family constraints, which discourage them from utilising opportunities to upgrade their skills or pursue higher position in institutions. Others are employed in jobs which are not compatible with the training they received (LWU, 1995). At the provincial and district levels there are even greater obstacles to women's advancement in technical areas such as aquaculture. Because of lack of funding there is little scope to increase the number of women staff in the department of livestock and fisheries.

Suitable extension materials and information on aquaculture could be distributed through non-aquaculture related training programmes or considered as a mini-component of broader training activities in income generation and food security.

10.2 The Lao Women's Union

The LWU is the national organisation recognised under the Constitution (Article 7) as the mechanism for the promotion of equal rights, advancement and mobilisation of Lao women of all ethnic groups. LWU has been entrusted specifically with the task of upgrading the role and status of women and actively involving them in the development process. The organisation works in co-operation with the other ministries, state agencies and international organisations. Since late 1988 the LWU has extended its scope of activity and expanded its relations with the international communities by making increased efforts to seek assistance and co-operation. The structure of the LWU is similar to other governmental structures in the country, with provincial and district offices. Every village in Lao PDR has a LWU representative.

Presently the LWU does not formally cooperate with the LAO/97/007 project. However, the LWU is keen and willing to work with the aquaculture project. A National Network on Women in Fisheries for the Lao PDR has already been planned by the Department of Fisheries and the LWU in Vientiane. Preliminary meetings were to be held in 1998, although this study could not verify the status of the network.

10.3 Collaboration with the newly established LWU - GRID centre.

The Prime Minister's Office in Lao approved a project co-operation agreement in April 1997 between the Government of the Lao PDR, UNDP and the Norwegian Aid Agency, to set up the Gender Resource Information and Development Centres (GRID). The LWU is responsible for the implementation of the project and is co-ordinating with the relevant ministries and experts.

GRID centres have been established in four locations, Vientiane, Savannakhet, Sayaboury and Xieng Khouang provinces. The activities of the GRID centres include:

- Sharing information on gender and development from Lao and abroad,
- Promoting knowledge of gender issues through training sessions and mass media campaigns,
- Training of government officials in gender sensitive data gathering, analysis and use of such information for development planning and promoting such planning.

The GRID centres have already begun facilitating gender sensitisation and training courses, with an emphasis on planning to incorporate gender issues into existing work.

10.4 Recommendations for project design

It is recommended to make use of the institutional opportunities to increase involvement of women in aquaculture projects.

The above opportunities could be further explored through, for example:

- The LAO/97/007 project could to seek the involvement of the LWU in order to take advantage of its organisational and large-scale mobilisation capacity.
- Follow up on the Planning for a National Network for the Lao PDR could be undertaken by the Department of Fisheries with the LWU in Vientiane.
- Make use of the newly established GRID centres (Gender Resource and Development Centres) for networking on issues related to women in aquaculture and for disseminating information on raising fish and nutritional benefits of fish.
- Investigate the possibility of the LWU holding a workshop on gender and aquaculture at the GRID centre. The focus could be on how relevant information best reaches women farmers and how to diffuse information on fish farming from projects to women farmers.

13. CONCLUSION

The objectives of this study were to:

- Analyse the socio-economic and gender issues in Lao PDR aquaculture; and
- Make appropriate and practical recommendations for project design and implementation.

The study findings highlight numerous socio-economic and gender issues in relation to aquaculture in the Lao PDR. Both women and men are actively involved in aquaculture, although they have different roles at different stages of the fish production cycle. The study documented differences between the division of labour in the various ethnic groups. Further differences in the involvement in fish farming were explained by economic position of the households, and their ability to invest in, especially pond-based, fish culture. Lastly, position in the household and age are factors contributing to variations in involvement in aquaculture.

The report has indicated specific recommendations to respond to the socio-economic and gender issues identified. One of the constraints identified, the limited access of women farmers to fish farmer groups and aquaculture training, is discussed in detail. Recognising the potential role of women in aquaculture development, special efforts need to be made in order to ensure that the aquaculture project is more gender sensitive, reaches both women and men and actively includes women in fish farmers groups and aquaculture training.

Suggestions are included on how to overcome the constraints to engage in aquaculture and make maximum use of the opportunities. Suggestions are directed towards the project staff at all levels, but also include ideas of possible linkages with other institutions, such as the LWU.

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the 1990s, the number of people in the UK who are aged 65 and over has increased from 10.5 million to 13.5 million, and is projected to reach 17.5 million by 2025 (Office for National Statistics, 2005).

There is a growing awareness of the need to address the needs of older people, and the need to ensure that they are able to live independently in their own homes for as long as possible. This has led to a number of initiatives, including the development of new housing types, such as retirement housing and assisted living, and the provision of services to support older people in their homes.

One of the key challenges in providing housing for older people is to ensure that it is accessible and suitable for their needs. This includes providing features such as ramps, handrails, and lifts, and ensuring that the housing is located in a convenient and safe location.

In addition, it is important to ensure that older people have access to the services and support that they need. This includes access to health care, social care, and community services, and ensuring that they are able to participate in social and recreational activities.

There are a number of ways in which the housing and care needs of older people can be met. One approach is to provide dedicated housing for older people, such as retirement housing or assisted living. Another approach is to provide services to support older people in their own homes, such as home care or day care.

It is important to ensure that the housing and care needs of older people are met in a way that is respectful of their dignity and autonomy. This means involving older people in the design and delivery of housing and care services, and ensuring that they have a say in the decisions that affect their lives.

There are a number of challenges in meeting the housing and care needs of older people. One challenge is the need to ensure that housing and care services are affordable for older people. Another challenge is the need to ensure that housing and care services are of high quality and meet the needs of older people.

There are a number of ways in which the housing and care needs of older people can be met. One approach is to provide dedicated housing for older people, such as retirement housing or assisted living. Another approach is to provide services to support older people in their own homes, such as home care or day care.

It is important to ensure that the housing and care needs of older people are met in a way that is respectful of their dignity and autonomy. This means involving older people in the design and delivery of housing and care services, and ensuring that they have a say in the decisions that affect their lives.