

## CHAPTER 5

### LIVELIHOOD DIVERSIFICATION AS AN ADAPTATION TO ENVIRONMENTAL DEGRADATION

To maintain livelihoods by providing flexibility among sources of income, diversification may be important in cases where primary activities fail (Berry, 1989). Livelihood diversification means attempts by individuals and households to find new ways to raise incomes and reduce environmental risk, which differ sharply by the degree of freedom of choice (to diversify or not), and the reversibility of the outcome (Hussein and Nelson, 1998:3).

It is easily recognizable that, on Inle Lake, the rate of water level decline has accelerated in recent years, and Myanmar experienced drought and water scarcity due to little rainfall in 2009, and significantly increased temperatures and a late monsoon in 2010. As a consequence, the water in Inle Lake reached its lowest recorded levels at these times, causing water scarcity and difficulties for transportation as well as for the floating gardening sector. Prior to 2010, the floating islands never touched the bottom of the lake; whereas, in the summer of 2010, the water level was so low the plants constituting the floating islands became rooted to the lake bed. The floating islands could not float, so that when the water level rose again, they were still attached, meaning the tomato plants were submerged and died. This is why most of the floating gardeners on the lake lost their capital, both monetary and labor. A lot of capital is needed for floating gardening; from seeding through to harvesting, so the Intha people have faced difficulties making a living in recent years. In some cases, the floating gardeners have had to sell their gardens to others, because they did not have enough capital to invest further and were caught in a debt trap.

The water level was low again in the growing season of 2011, causing unfavorable conditions and with some floating islands again touching the bottom of the lake in a few villages, although the water level did not fall as low as in 2010. As a

result of these events, some people stopped their floating garden activities and changed livelihoods. For example, some people with enough capital bought motorboats and started running travel services for pilgrims.

### **5.1 Livelihood Diversification as a Result of Environmental Uncertainty**

Although different factors play an important role in livelihoods, environmental degradation is the primary threat to the livelihoods of the people around Inle Lake. In this case, the Intha have tried to cope with their changing environment, and among the five coping strategies mentioned previously, most of them have decided to diversify to survive in the current environmental conditions.

**Ko Phaw** is the head of a poor household and owns a small piece of land where he cultivates potatoes for subsistence. As with other people in the village, he has stopped growing tomatoes on his floating gardens and now works as a motor boat driver for his uncle. He prefers to fish because he can get more money from fishing than driving motor boats – which does not provide a regular income.

When I interviewed him, he told me that half of his fishing nets had been stolen the week before; he had bought them when he stopped his floating garden activities in 2010. He bought fishing nets with the intention of increasing his income from fishing, as if one has more fishing gear, one can earn more. However, many people's fishing nets have been stolen in the lake at night, while the fishers are asleep on their boats. To buy fishing nets again and again is a burden for them, as their income is very low and the fish catch has declined as the environment in and around the lake has degraded.

**U Yay** is the head of a middle-income household and is a floating gardener now aged about 50. At present, he and one of his sons go fishing almost every day, except on market days. In the late afternoon, he goes to the lake's open water area to lay nets in the water for fishing and goes back home. In the early morning, these nets are taken from the water and the fish inside them collected. Most of the fish caught are Tilapia and so are not local species; however, the Tilapia fetches a low price when compared with the local fish species. The local fish species are very rare now, due to a number of different factors. After returning from the open water, the fish caught are

sold at the fish brokers' houses, once some have been retained for household consumption.

One of his sons now works as a motor boat driver for his uncle. They have their own motor boat but it is not in good condition, as they cannot repair it due to a lack of money. If the motor boat could support the local tourism sector, they could earn a good income, but as it is, it is currently kept under a building in the monastery compound.

Up until two years ago, they used to buy clothes for their sons whenever they wanted, but since then they have not been able to buy clothes. For food, they now cook and eat meals very rarely, and their current budget condition limits them in what they can spend their money on. However, they still dream of growing tomatoes on their floating gardens, and as I spoke to him, he was clearing bushes, weeding, cleaning the floating islands and preparing to grow them again; his main livelihood activity.

When **U Hla Aung**, a member of a middle-income household, was young, his family's main livelihood activity was rice cultivation. He started to go fishing when he got married, and for about ten years since, has been fishing. When he started, fishing was the main source of income for his family, and he could catch at least eight kilograms per day, but now he does not know how many fish he will catch. As a staunch Buddhist, his mother did not like him fishing. She told him it was a misdeed to kill living creatures for one's profit, so after a while he no longer wanted to fish. His mother gave him some paddy fields, but he then sold this land and bought a motorboat - to run local tourists around the lake.

In 1990, some villagers from his village founded a motorboat service organization namely 'Inn Lay Pyaw Yey Yin Ah Thin', which means the 'Association of Boat Services - to those who enjoy Inle Lake'. He joined this group in the hope that it would flourish, plus to satisfy his mother who did want him not to go fishing. Also, as a Buddhist he believes that it is virtuous to take pilgrims to the pagodas.

However, the business did not flourish, for the main jetty is situated in the main town of the lake, Nyaung Shwe, so most visitors did not know about it, though they did take people to the natural hot springs nearby. As time went by, he became friends with a group of tour agents from Yangon, and they became his regular

customer - sending him domestic tourists to take to the pagodas. Every weekend, they organize package tours to the area, so these tourists have become his regular customers. Except during the wet season, he has at least two bus-loads of pilgrims to send to the pagodas on the lake every week. On the full-moon day of Tazaungdaing (the same day as Loy Kratong in Thailand) in 2011, he took about fifteen bus-loads of pilgrims to the pagodas. He has so many customers/pilgrims because he has a better network than others.

He charges a normal price for his motor boat services, saying he doesn't want to charge more money than the service is worth. Some people take much more money for their services, which is not good because some of the pilgrims are quite poor. The main thing is that they, the pilgrims, visit Inle to pay homage to the pagodas on the lake, and the boat drivers can get money by fulfilling a good deed. So, this job allows him to gain, not only money, but also merit, which means he enjoys it a lot.

Five years ago, in one village around Inle Lake, there was a spirit-medium who received information from the spirits. He was only about seven years-old and cured various health problems by touching people with his legs. Almost all those who had health problems got better after seeing him. As a result, he became famous and many people from other regions of the country came to see him and have their health problems cured. At that time, U Hla AUng ran a service taking people to see this very young spirit-medium and his motor boat service flourished. They received a good income for about one year; however, after that, the income flow dried up.

Over the last few years, due to the lack of parking and the high costs in Nyaung Shwe, some package tour companies have come to the village jetty, where many cars can be parked in the village monastery compound free of charge. Some of the pilgrims stay in the monastery free of charge. For these reasons, many pilgrims now make their pilgrimages to his village, and some young men go to the highway junction to pick them up and welcome them, explain about the motorboat service and negotiate service fees for bringing them to the village. In this way, more domestic tourists have visited Inle Lake through his village as a result of using the motorboat service.

For U Hla Aung, working in local tourism is better than the other jobs he did in terms of income and religion. Now, he owns two motorboats, one motorbike, a

mobile phone and a sugar-cane plantation. When he started to engage in tourism, he had only one motorboat. In terms of religion, his former job, fishing, represents a misdeed according to Buddhism, so he felt guilty in his former job. The present job, local tourism; however, is not a misdeed as he does not need to kill any creatures to make a living. Moreover, providing a motor boat service to the pilgrims gains him merit. As a result, he enjoys his present job and is trying his best to do it well and earn merit.

If we can negotiate with the pilgrims, we can make a profit. Negotiation skills are essential for this job; if one cannot negotiate with visitors, it is difficult to survive (U Hla Aung from Lwe Nyeint Village, 2011).

He always charges reasonable prices because charging too much money is also a misdeed according to his religion. Those who are very greedy do not hold on to their money for very long, and in the long run, he believes that the customers, both package tour company and regular pilgrims, recognize those who provide motorboat services at a reasonable price. One of his opinions is that not all the pilgrims are rich; some may be rich and some poor, but the reason they come here is to pay homage to the pagodas, so he does not want to charge them too much.

His two motorboats drivers are his nephews, while one of his daughters is married and has her own motorboat. For him, he plans to continue with his motorboat service as he is really fond of the job.

**Ko Ngwe** is from a poor household and he has been going fishing since he was fifteen years-old. Actually, he is not a native of the village – he is from another village on the lake. He got married with a girl from the study village and so settled down there. After getting married, they practiced floating gardening, a business inherited from his wife's side, practicing reciprocity with relatives from his home village. For the inputs required for floating gardening, he borrowed from his sister at a low interest rate, plus from a middleman from Nyaung Shwe. He and this middleman became friends after meeting at a pagoda festival. He repaid the money from the middleman after harvesting his crops. Last year, he bought medicine for his

grandmother who has now passed away. Their family was going very well with their income from the floating gardens at that time, so did not engage in tourism.

In the summer of 2010, due to the low water level in Inle Lake, his family lost its capital, and this happened again in 2011, though not on the same scale. This left them in a debt trap, though his sister did not ask him for her money back, as she understood he would give it back as soon as possible if things went well in his work. This is because he helped her in terms of money and labor when her family also lost their capital in floating gardening activities one year.

Since 2011, he has been engaged in tourism as a motor boat driver, for a daily income. In comparison with fishing, motor boat driving is not so secure, but if tourists come he can get tips and commission from the weaving quarter. If the boats stop at the weaving shops, they give the driver 1000 Kyats as a tip. Moreover, they get a commission if the tourists buy things from their shops. One thing about being a motor boat driver is that it is not as tiring as being a fisher. In addition, his wife is afraid of being alone at home during the night, and when he went fishing in the evening, she did not like it. As a result, he chooses to do this job because he only has to work during the day. Fishing at night is better in terms of the fish catch, but as a compromise, in the tourism season he works as a motor boat driver and then goes daytime fishing in the off-season.

While floating gardening is favored, the family can also earn a good income from going to the five-day market and selling snacks and light food. At present, only his wife goes to the market, in order to save on expenses. His wife sells bird food to visitors at the village jetty, and has done since 2010. As a result, they have been able to pay back some of the credit they got from the UNDP Micro-credit Program.

For the coming season, he told me they had not decided whether to practice floating gardening or not, because they said they would need a lot of money to start it up again; to buy bamboo for the floating islands and for scaffolding. Moreover, he said they would need to buy seeds, fertilizer and pesticides, plus hire wage labor for cleaning the garden – all of which would cost a lot of money.

In Myanmar, Inle Lake is one of the most famous and attractive tourist destinations due to its cultural value, wonderful lifestyles and high scenic value. Many tourists from around the world come to Inle Lake and consume its culture, ancient

pagodas, scenery, plus the unique leg rowing style and agricultural practices of the Intha. Some tourists hike from nearby towns to reach Inle Lake, passing through the mountainous area and exploring the traditional lifestyles of the local ethnic groups.

Tourists normally hire wooden boats with an outboard motor to navigate the lake and the narrow canals, stopping-off at stilt-house villages, a nineteenth-century monastery and a sprawling lakeside open-air five-day market that rotates from site to site during the week. They also check out the beautiful but problematic floating gardens and visit the handicraft workshops and temples, including the region's holiest site, Phaung Daw Oo Paya, a multi-tiered pagoda with Buddha images covered in gold (Wall Street Journal, June 17<sup>th</sup>, 2010).

Most of the motor boat owners use their boats in the tourism sector when local pilgrims do not come in large numbers. When transporting tourists, they can get a lot of tips, and when they stop their motor boats at stilt house and the passengers buy clothes or handicrafts, the motor boat drivers can get a percentage of the sales price. At the end of their trips around Inle Lake, mostly tourists give a tip to the motor boat drivers.

When floating gardening was still a good business, a very few vendors sold gold paper in order to decorate the pagodas, plus cold drinks, coffee, snacks, lotus and bird food at the village jetty. At that time, most of them were floating gardeners, while those who did not own their own garden worked as wage laborers. Now their gardens do not give a good profit, some housewives have started selling the above items for a living while their husbands go fishing or drive their motor boats. At the weekends, some students sell items for pocket money, while during festivals, many sellers can be found, as they can make more money at such times.

The peak period comes when pilgrims visit Inle Lake during the Tazaungdaing Festival, which is held on the full moon day of the eight month in the Myanmar calendar. There is also a very famous balloon festival held in Taung Gyi, the capital city of Shan State, just about 30 km from the lake. The balloon festival is one of the most popular festivals in the area and people from around the country come to join it. After that festival, many people visit Inle Lake to pay homage to Phaung Daw Oo Pagoda, and during this time, the price of the motor boat service is higher than usual, and almost all the young men and women are busy working as motor boat drivers and

also as vendors. Some sell sticky rice sticks made from the stems of elephant grass from the lake with sticky rice added. This is a snack unique to Inle Lake, as it is made with bamboo in other areas.

Ko Soe Myint belongs to a poor household and owns 1000 *lans* of floating gardens. However, since the 2010 growing season he has not practice floating gardening and he told me that in the coming growing season (2012), he would not practice either because his gardens were in a worse condition than in other areas; they were not able to float and the plants had died. However, he also cannot practice land cultivation in the area, so his wife runs a small, traditional salad shop at the village jetty. She also sells other items like gold paper and bird food.

In normal years, a few people make traditional snacks, locally called *kywe mont*, for sale, but during festivals almost all the villagers make these snacks as the demand for them is huge during those periods. Now, more households carry out such small domestic jobs, as they cannot practice floating gardening. Currently, there are fifteen households who regularly make *kywe mont* for their livelihoods, and on market days they go to the market and sell them. Some people with financial capital hire others as wage labor to do this work.

For this job, the wage labor used is female - mostly women who used to work on floating gardens but now make *kywe mont* instead. Although some people want to make the sweets in their homes, they do not have enough money. The sweet is made from Shan rice, not from Inle region rice, as this cannot be used because it is too sticky. One big pack of Shan rice costs about 3000 Kyats and they can make 50 kilograms from this. To make *Kywe Mont*, one must use at least two big packs of rice at a cost of 6000 Kyats. Moreover, firewood is needed, so the job requires some money to be invested.



Figure 5.1 Making Traditional *Kywe Mont*

U San Hla's daughter is a graduate, but is living at home to cover the household chores. Sometimes, especially during festivals, she tries to earn extra income by making traditional snack to sell to those who run shops at the five-day markets. When it is floating gardening time, she helps with adding the fertilizer and fumigants on to the garden.

**Daw Htwe** is an elderly widow and is poor. She owns a large area of floating gardens – about 800 *lans*, which is above the average of about 500 *lans*. She does not have any sons but does have daughters, but no labor force, in her household. Her daughters can work but cannot do the processing work in the garden. Unlike with the other agricultural practices, men tend to carry out all stages of the process. Other agricultural practices can be done with the help of cattle or machines. As a widow, Daw Htwe did not have enough money to grow crops across all her gardens, and could grow only on some plots according to her budget. In her case, although she has enough floating gardens, she could not use all of them and had to leave most of them idle due to a lack of labor and financial assets. In this way, her household could not utilize its natural capital, and when the water level dropped in the summer of 2010,

her floating islands touched the lake bed and the roots of the aquatic plants anchored themselves to the bottom of the lake. The islands were then submerged when the water level rose, meaning she lost all her capital. Now she makes traditional snacks and sells them at the five-day market. Before market day, she and her daughters make the snacks nearly the whole day; however, it does not cover her daily expenses very much.

In the open season, the water level of the lake gradually declines and some of the land which is underwater in the wet season appears slowly. Some of the lands that were once floating islands are transformed into dead zones when the water level is shallow and they touched the lake bed. The Intha people used to grow seasonal crops on this kind of land. Each family has its own area and most of them grow tomatoes on that land. They start growing tomatoes in November and December, then they cultivate the crop in February and March.

After the wet season, the lands appear as the water level declines and the farmers start to prepare the land. The ploughing is done using a mattock and all the work is done by hand. After ploughing, the potatoes are planted in the ground and covered with algae in order to maintain the moisture level. Algae plays an important role, as a natural fertilizer and moisturizer under this form of cultivation. After about three months, the potatoes can be cultivated. Some are used for household consumption and some are set aside for sale - depending on the amount of land they have grown on. Mostly, the profits from potato farming are used to buy inputs for the floating gardens, such as seeds, bamboo, fertilizers, insecticides and pesticides, but this money is never enough to cover all the items required.



Figure 5.2 Preparing the Land for Potato Farming

Today, the water level is lower than before and there is a lot of sediment in the lake, so the level of the land is rising year on year. This situation has made it difficult to find water and the collection rate has dropped. Moreover, there are more insects and bacteria than before and farmers have to use more fumigants. In the past, they could collect about fifteen kilos of tomatoes during the harvesting period if have planted one kilo in the growing season, a ratio of fifteen to one. However, nowadays they can get only about five times what they grow. In some villages, as the water level has declined, so the floating gardens have been into potato farms and seasonal cropping land. On that land, they can grow potatoes, tomatoes, flowers and vegetables when the water level is low in the open seasons.

**Ma Phyu Nu** is the housewife in a poor household. In 2010, as with other villagers, her floating islands touched to the bed of the lake, so the family's floating gardens dried and did not produce tomatoes, so they lost money. Last year, the water level was higher than in 2010 and they grew tomatoes in their garden; however, their floating islands still touched the bottom of the lake. When the crops were about to be harvested, the water level increased and all the plants were left underwater, meaning

they lost their entire capital input. Moreover, her husband was hospitalized due to a health problem and they needed to spend more money on his health care.

Having borrowed some money for gardening and hospitalization, they are now in debt. First, they borrowed some money from a middleman, then when they lost their their capital investment in the floating gardens, they took out some credit from the UNDP to repay the middleman. When the time came to repay the UNDP, they borrowed money from their relatives. Now, they have taken out more money from the UNDP to repay their relatives, because their relatives' interest rate is higher than that of the UNDP. At present, her husband goes fishing everyday and it is their only source of income – just enough for their daily expenses and to pay the loan interest. Her husband is not so good at fishing, as previously he did not need to go fishing. Also, he has not joined in with the local tourism activities because that type of work is unfamiliar to him. Sometimes, he works as a motor boat driver for his sister's family, who are now working as female middlemen. For her, she does household work and sometimes sells bird food at the village jetty. She did not have to sell like that before, but now she does so to give pocket money to her two children, who are both primary school students. On market day, she sells the fish caught by her husband at the market place near their village. They now cannot spend as much money as before, and due to their low incomes, worried about covering the next week's expenses.

Now, she is preparing to grow potatoes on the islands around the house. These islands appear in the open season and disappear during the wet season. They grow potato on these islands in the winter and collect them before the wet season starts, and this represents extra income for them. Concerning the floating garden activities, she think they will not be able to grow tomatoes in the coming seasons as they are unlikely to have enough money to clear the gardens and to prepare for growing. The year I visited they had to spend three times the normal rate for preparing the land. As a result, they do not intend to grow in the near future, but if they can get some money from growing potatoes, they will start growing tomatoes on some of the floating islands.

In her case, tomato farming represents the chance to restore their original livelihoods, and it is clear that their livelihoods are dynamic and their jobs are closely linked to each other, so that one livelihood failure affects their other livelihoods.

Environmental deterioration has impacted on their access to natural capital – their floating gardens, and as a consequence, it has also affected their daily living activities and their access to education, as well as their sense of well-being.

Those who own some land are few in number, and those that do rely only on cultivation of that land. Some of their land is used for home gardens, mixed with bamboo. Most of that group also practice floating gardening on the lake area and island cultivation. They mostly grow cane sugar, pigeon peas and maize as seasonal crops on their land, and if they are favored by good market conditions they grow tomatoes on their floating gardens, making a good profit some years. Some years, the price of land crops is high and market conditions for tomatoes and potatoes do not support their livelihoods. In such years, they can still get by, but it is up to the amount of land they have and the kinds of crop they grow. Comparing land cultivation and floating gardening, if the market conditions for floating tomatoes are good, they can make more money, though in some years, the price of both land crops and floating tomatoes is not good and they lose all their capital, falling into a debt trap. In such years they may lose more money than those who grow only tomatoes.

Growing sugarcane is another means of making a living in the Inle Lake region, on both the eastern and western banks of the lake, but more sugar plantations can be found on the eastern bank, though the number on the western bank is growing. In the middle parts of the western bank, there is Thandaung creek delta, and this area is the most crowded area in the Inle Lake region. Some decades ago, that area was mostly used for paddy farming, but due to sedimentation, most of the paddy land has been transformed into sugar cane plantations. Farmers can grow sugar cane once every three years; it does not need to grow every year. The peak yield then comes in the second year, while the first and third years only give a limited crop yield in comparison.

Before 2010, the farmers had to sell sugar cane to the government factories based on a quota with a fixed price. Whether they wanted to sell their crops to the government or not, they had to sell a certain quota because an agricultural loan had to be accepted from the government. After selling to the government factory, the extra crops could be sold at the local market.

In 2010, the government factory was handed over to a private company and since then, there has been no agricultural loan system and farmers can sell their crops freely. However, the private sugar cane company floats the price of sugar cane in accordance with the market conditions, so farmers sell their crops if the price is acceptable to them. But, to sell sugar cane, the trucks transporting the sugar cane need to be lined up, and the crop price varies according to the level of viscosity. Some sugar cane farmers make molasses before selling at the local market, which is sold in some local private sugar factories. The better the quality, the higher the price of the product. In Lwe Nyeint village, there are ten households who own can sugar plantations; however, this is not their main livelihood activity as market conditions are insecure.

Some people are sellers at the five-day market around Inle Lake; some buy fish from the village and sell them at the five-day market. Some are vegetable sellers, and before market day they go to the lake and collect some natural vegetables, such as water convolvulus, and buy some growing vegetable from others.

**Ko Aung** is the head of a middle-income household. While **Ko Aung** is growing tomatoes on his floating islands, the family gets its financial capital from two key sources. The first source comes from his father's shop at the five day market. At Aung Pan market his father sells fish from the lake, and runs a shop at that market because his relatives live in that town, so can sell materials in their relative's houses. Sometimes, they borrow moneys from their relatives in case of need. Another source of money for the floating gardens is his motor boat service. So, the five-day market is a source of financial capital for some of the floating gardeners, and when they cannot gardening, their family mainly relies on the income from this activity.

Some housewives sell their fish near the five-day market on market days. When they are tending to their floating gardens, they do not sell at the market; they sell their fish to middlemen in the village. They now have to sell fish in a number of market places in order to get enough money to cover their household needs, and this can be seen as one of ways in which they have diversified their livelihoods in order to deal with the difficulties faced with their floating gardens.

Most of the villagers keep pigs in their houses for extra income, and some do this when they have no other job. One of the villagers, Ko Si, told me about the

animal husbandry he does to earn extra income. After getting married to a girl from the village, he settled there, and as he neither owned land nor had enough money to run his own business, became a wage laborer. During the growing season, he worked at other people's floating gardens, and if he stayed for the whole season on one job, was given clothes as a reward. At that time, he also kept some ducks to earn extra money income when he did not have a job.

As well as his floating gardens, **U San Hla**, from a middle-income household, keeps pigs not only for money, but also to provide natural fertilizer for his floating garden, which saves on having to buy the item. His family can also make a profit from animal husbandry, so pig breeding can be seen as one way of making a living in the village.

So, from these measures it can be seen that local people have attempted to adapt to the new challenges they face. Some go fishing more than they did before, while others have decided to engage in local tourism services, as motor boat owners or drivers. Animal husbandry is also a diversification measure some people have adopted, while others sell fish or traditional snacks at the five-day market.

## **5.2 Ability of the Intha to Adapt to the Changing Situation**

For diversification, financial and social capital is needed. Those who can get social relation and financial support can survive better than those who lack such forms of assistance. To get hold of these benefits, the villagers seek out a local microcredit program.

There are two microcredit programs in the village, namely the United Nations Development Programme and the Village Cooperative Organization. The UNDP supports local people in two ways; by providing microcredit and supporting infrastructure. For microcredit, the UNDP lends to poor people who need credit in order to invest capital in activities such as animal husbandry, floating gardens, potato farming and home gardens.

To get microcredit, first it is necessary to be a member of the program. Almost all members are housewives, because a member must attend regular meetings and the men cannot do this as they are busy working during the day. There is a limit on the amount of credit one member can take out, and every month, as a member, it is

necessary to attend at least two meetings. The UNDP lends money at a 2.5 percent interest rate. The UNDP also supports infrastructure projects such as the construction of village roads, wells and sometimes check dams.

For those who want to keep pigs, the UNDP will provide microcredit to help them buy piglets, and if the pig dies early, they do not need to repay the credit. According to a number of villagers, the UNDP supplies about 75-80 percent of the projects in the village and was started nine years ago. About 80 percent of the housewives in the village have taken credit from this program.

The second microcredit program in the village is the village cooperative organization. In the summer of 2011, I went to the village to conduct some preliminary field data collection work. The water level was very low at that time and conditions were not good for floating gardening. When I met one of the Shan state government officers, he told me about the environmental situation around Inle Lake and the difficulties local people face. The officer was eager to help local people as much as he could, so tried to introduce microcredit to the village as part of a formal procedure. Finally, as a result of his efforts, the government Cooperative Department agreed to set up a microcredit scheme in the village.

To get microcredit from the Department, one needs to have an organization, so the villagers founded a village level cooperative organization and applied to join the scheme. At first, they applied for 8 millions kyats as microcredit for their village. The Cooperative Department allowed the village to join, and now when a member takes microcredit from the program, he or she must pay the Cooperative Department 1.5 percent interest and the village organization one percent. There are 51 members of the organization, and each member can save money into the organization and receive one percent interest back. Each member can then borrow three times the amount of money he or she has saved. If a member wants to buy a motor boat and does not have enough money to do so, he or she need to save one-third of the current value of the motor boat, plus needs to apply for credit one month ahead. In this way, members can buy motor boats and enter the local tourism sector. Some have bought trailers based on the money received from their village cooperative organization.

**Ko Ngwe** told me that he has not borrowed money so far from the village cooperative organization, but that he is thinking of doing so because the villagers are

planning to install electricity in the village. To get connected to the electricity supply in the village, each household will need 600,000 Kyats. His case shows that the village operative organization offers one more options for the villagers in terms of receiving financial support:

In the long run, our village cooperative organization will help us a lot. Those who want to buy a motor boat or motorbike can borrow money from the organization to sustain their livelihoods (U San Htun from Lwe Nyeint Village, 2012).

This organization is now giving microcredit to villagers who have an emergency, such as health problems. If poor people have health problems, it is difficult for them to get credit without a mortgaged property, and if they do get credit without collateral, the interest rate is very high. The village cooperative is now helping to empower the poor and improve their standard of living. By January, 2012, this organization's funds had reached more than ten million kyats.

### 5.3 Capital to Cope with Livelihood Change

As the Intha try to cope with their changing environment, the availability of livelihood capitals influences their well-being, but different households own different levels of capital.

Most of the villagers possess natural capital in the form of their floating gardens. Among them, **Daw Htwe** is the most vulnerable because there is no man in her household and the quality of the labor force is low. Although she owns a large garden area, a lack of labor plus financial assets makes her vulnerable, even during normal environmental and secure market conditions. No labor also means no reciprocity for her, and as a consequence, her household is not able to enhance its status, plus cannot save money nor use jewelry as a financial asset for the following season.

If my husband were still alive, our family would not be in trouble.

Now, we try to survive with little labor and financial capital. Although we own a large area of floating gardens, we cannot earn a high income

and face a number of difficulties (Daw Htwe from Lwe Nyein Village, 2011).

So, this cycle can be shown as follows:

Poor Human Capital      —————> Poor Reciprocity (Social Capital)      —————> Poor  
Financial Capital

Table 5.1 Capital Available for the Study Households

No	Name / Assets	Natural Capital	Financial Capital	Physical Capital	Human Capital	Social Capital
1.	Daw Htwe (Middle-income)	*Strong	Weak	Weak	Weak	Weak
2.	Ko Si (Poor)	Weak	Weak	Weak	*Strong	Weak
3.	U Hla Aung (Middle-income)	Weak	Weak	Weak	Weak	*Strong
4.	U Kyaw Win (Poor)	*Strong	Weak	Weak	Weak	Weak
5.	U Maung (Better-off)	*Strong	*Strong	Weak	Weak	Weak

The wage laborer, **Ko Si**, a poor householder, is good at running the floating gardens and at local tourism activities but owns neither a floating garden nor a motor boat. As a result, his only asset is himself (as a wage laborer) and he cannot earn a good income.

**U Hla Aung** is a motor boat service provider, but does not own a floating garden. He used to go fishing, and when he first engaged in tourism did not have a motor boat, but as time went on, he was able to use his connections with some tourist companies and this social capital changed his life. Later, he bought a motor boat, motorbike and a mobile phone, and can now earn more profit. At present, his job provides him with a good living and his livelihood can be seen as sustainable. To be

able to network with outsiders is a good quality to have, because most people in the village do not want to talk to strangers; they prefer working hard to negotiating with visitors. U Hla Aung's capital can be shown thus:

Social capital      —————> Physical Capital

Although **U Kyaw Win**, a middle-income householder, owns a floating garden, he faces many difficulties when the environmental conditions do not favor this activity. He faces difficulties due to his lack of experience at other jobs such as motor boat driving and fishing. He does not have his own motor boat and that has made his life situation difficult.

If I were skilled at fishing, I would not be in as much trouble as I am now. We now live on a very low income when compared with the other floating gardeners (U Kyaw Win from Lwe Nyeint Village, 2011).

**U Maung**, was better-off when the environment and market conditions were favorable; however, his garden has been the root of his family's vulnerability as the environmental conditions have deteriorated. As mentioned above, the family's lack of labor means it costs a lot of money to grow tomatoes, so the availability of labor shapes their household well-being. In his house, the other family members are too old or too young to work, so the **age** of close family members has also influenced the family's ability to cope with the changing environment:

Adequate Natural Capital + Poor Human capital+ Environmental Degradation  
 —————>Worse Living Conditions

As their main livelihood activity is floating gardening, so the availability of a labor force is critically important and shaped their ability to survive. The profits obtained from a floating gardening business depend on the availability of labor in the household. For instance, if two households practice floating gardening in the same area, the household with more workers available will make more profit, because it does not need to spend as much financial capital as the other household. If the price of the crops is low, the first household will not lose as much financial capital as the

second household. As mentioned before, labor also plays an important role in terms of gaining access to social capital, especially in terms of reciprocity within the floating garden and tourism industry. It is not only the presence of a labor force, but also the quality of the labor and skills available that shapes peoples livelihood options. All in all, this shows that among the five livelihood capitals, human capital, and especially a labor force, is the main factor shaping the ability of households to survive in the study area.

Fundamental assets are interconnected, and it is necessary to harmonize all so as to sustain a livelihood. When considering livelihoods, gender issues should also be considered, as, according to Hussein (1998), in some contexts men are able to avail themselves of diversification opportunities that are not open to women due to cultural constraints. However, in the Inle Lake area, in terms of labor, gender issues are not prevalent, not due to culture but because of the working conditions. In floating agriculture, local people demand a male rather than female labor force, although women work in some of the processing activities, because they believe that working in the floating gardening sector is very tiring, unlike working on the land.

With respect to livelihood diversification, **religion** plays an important role. U Hla Aunge quit his former job, fishing, because his mother did not want him to be a fisher, as killing creatures is a sin within Buddhist ideology.

I now do this job because my mother asked me not to go fishing for a living. Otherwise, I would still be a fisher and my life would be as before; I would be spending my life my fishing, for a low profit (U Hla Aung from Lwe Nyeint Village, 2011).

Not only in his case, but also in the case of the Inthas; they switched fishing to floating gardening due to the Buddhist teachings of Abbot Watthakin. Apart from the basic capital possessed, livelihood diversification may be influenced by other things such as location, demography, vulnerability, income and education levels and many other factors, in the local context.

The Intha use other strategies to cope with the changing environment, something that threatens their livelihoods. In the case of Ko Ngwe, when things were going well with his floating gardens, all members of the family used to go to the five

day market near the village and buy traditional snacks and food; whatever they wanted to buy. Now; however, due to the low income they earn, only his wife goes to the five day market to buy some things for cooking, while the others stay at home to save money.

When they practiced floating gardening, whenever Ko Aung asked his patents for moneys in order to visit the city, they were able to support him. Now, they only spend their money on essential items. However, he only enjoys himself and feels safe when he is practicing floating gardening – he is unhappy working in other jobs.

One person told me that they used to use one liter of cooking oil a week when they were growing tomatoes, but now make it last for one or two weeks, as they are trying to reduce their daily expenses. Before, U Yay used to buy clothes for his sons whenever he wanted to, but in the last two years has not bought any clothes. For food, he now cooks and eats meals very rarely.

When the floating gardening sector was doing well, the villagers received a good income and used to go shopping to Taung Gyi, the capital city of Shan State, where they bought clothes and electronic items such as televisions and DVD players, once every one or two months. Now it is difficult for them to go shopping in Taung Gyi for luxury items. Some people told me that when they could grow tomatoes on their floating gardens, they used to buy a big bag of rice for cooking, whereas now they can only buy enough rice for one week or so.

Among the five livelihood capitals, labor is the most important during both normal and difficult conditions; however, negotiating with outsiders has become more important in today's high risk environment. When the villagers engage in tourism, it is those who can negotiate with visitors who are able to cope more effectively than those who are not good at dealing with outsiders.

#### **5.4 Summary**

The Intha people have had to diversify their livelihoods and make an effort to adapt to the environmental challenges they are experiencing. When they cannot practice floating gardening, they go fishing more and use more people to fish. Some people have started a local motor boat service, or have become motor boat drivers. Those who have some financial capital have been able to start animal husbandry

businesses, as a diversification measure. Some now work as fish traders and some make traditional snacks to sell at the five-day market.

At the village level, local people they formed village level organizations, to manage the community forest and to support the microcredit program. These organizations play fundamental role in dealing with the environmental hardships they face, by pooling their community resources. One of these village level organizations helps villagers by lending money, and this financial program has made it easier for households to diversify their livelihoods and cope with the changing environment.

Among the five livelihood assets, labor is vital in both normal and difficult condition, as floating agriculture is labor-oriented. On the other hand, negotiating with outsiders has proved highly significant in the high risk situation faced by the study villagers, for those who have been able to negotiate with visitors have handled this risk more successfully than those have not.

This chapter has described how the Intha have reproduced their livelihoods using an holistic approach, in order to cope with the deteriorating environmental conditions they face. The approaches taken by them are dynamic, and it is clear that livelihood is not a single household survival tactic, but a total utility strategy.