

CHAPTER VI

LIVELIHOOD STRATEGIES IN OAKPO-KWIN-CHAUNG VILLAGE SINCE DEGRADATION OF THE MANGROVE FORESTS

Encroachment into the mangrove forests in the Ayeyarwaddy Delta occurred somewhat like shifting cultivation. First the villagers cut the mangrove trees for fuel wood and charcoal, then they cleared the forest and changed it to paddy (rice) cultivation, or shrimp farms. The production of paddy and shrimp was then good during the first five or six years after clearance of the forests, but later production gradually fell owing to acid-sulphate intrusion, or other forms of pollution. The farmers then moved to a new area and repeated the same process, just as with shifting cultivation. Some of the abandoned shrimp farming areas turned into salt pans, but most were abandoned altogether and became unproductive.

The reserved forests include trees or forests, and water bodies in the form of streams, rivers or ponds, and it is understood that whenever there is water or a water body, even in the reserved forest, it is the domain of the Fisheries Department, and much of the encroaching farmland is in the reserved forests. A clear cut land use policy is an essential ingredient to make this community forest program successful, and it is believed that community forestry will only work successfully in terms of reforestation or restoring the ecology of the depleted, waste or abandoned areas, with the co-operation and participation of local communities, such as the landless people; giving them tenure rights of 30 years or more and sharing benefits among themselves. The co-management of natural and man-made forests under such a policy would certainly encourage the local communities to look after these natural or man-made assets sustainably. Perhaps this is the one and only solution for mangrove reforestation.



6.1 Local Villagers' Livelihood Adaptations

Mangrove forests have been perceived as desolate, unproductive regions along coastal areas, and many local communities now see mangrove ecosystems as an impediment to their economic practices. As a result, mangrove forests are now among the most threatened habitats in the Delta region. Industrialized nations supposedly have stricter laws protecting mangroves, although destruction continues in the Ayeyarwaddy Delta. The mangroves' lenticels, although very helpful in providing oxygen to the root systems, are highly susceptible to clogging. Crude oil, attacks by parasites and prolonged flooding by artificial dikes, can kill large numbers of mangrove trees. Mangrove forests are a very unique and complex kind of coastal wetland. They have evolved over centuries, not only in relation to their internal systems, but also to the functioning of the local ecosystems and also human systems that surround them. They are an open system, and thus, are directly related to all that is around them. Many mangroves have been cut down to provide ocean-side land for local housing and for recreation. The most destructive process; however, has been shrimp aquaculture.

Conflicts have occurred between three main groups: paddy farmers, fishermen, including mud-crab collectors, and the forest plantation user group members. Paddy growers need water to be stored in a reservoir, dam or in streams to use on their rice fields for sound and vigorous seeding. The fishermen, on the other hand, need the water to flow without interruption for fish, prawn and crabs. In these tidal areas during the high tides, stream or river water reaches into the community forest plantations on the higher ground and the mud crab collectors then intrude into these plantation areas, stepping on and up-rooting seedlings, or cutting tree branches for crab traps. These are the major conflicts still to be addressed and resolved by the village authorities, project personnel and the Forest Department. If necessary, other agencies such as the Agriculture and Irrigation Department, the Land Settlement Department and the Fisheries Department should also be consulted

Many women and young girls make nipa thatch roofing – often spending all in their house making it, and all the nipa forests are owned according to traditional norms. In this village, there have three nipa forests owners. Women and young girls buy the nipa leaves, bamboo sticks and rope from businessmen, then receive two

kyats for every thatch sold. Everyday, they start work at seven a.m. and finish at five p.m., and in one day they can finish 250 to 300 roof sheets. The income they receive is about 500 to 600 kyats per person per day, and when I was in the village, I saw that about 80 households making nipa thatch to survive. One nipa thatch is three feet long and one-and-a-half feet wide. After the thatch is finished, businessmen gather all the completed sheets from the women and keep them in front of their houses. They then wait for a passenger boat to send all the sheets to Bogale, where the businessmen sell the thatch to traders, at a high price. The traders also sometimes send a large number of nipa thatches to Yangon city, using a big boat and in accordance with market conditions.



Figure 6.1: Nipa Thatch being Sent by Boat



Figure 6.2: Nipa Thatch Making

Local villagers are left to collect crabs on the mud flats everyday, and even children collect crabs with their fathers and mothers on the mud flats. These children would like to go to school, but their parents are poor and do not have enough money for their food each day. When they collect crabs, they sell to the crab buyers or brokers, who are appointed by one company from the city. If a crab is bigger than twelve centimeters across, it can fetch 1,000 Kyats. Some children try to collect crabs the whole day on the mud flats, and on average, one child can make 3,000 Kyats in one day. As a result, children spend most of their time collecting crabs instead of going to school. Some elders also use crab traps when they seek them out along the creeks or the river, using boats.

In total, 95 percent of the villagers collect crabs and make nipa thatch; these are the main jobs that support their livelihood strategies. With the destruction of the mangrove forests, the loss of employment and declining paddy yields, villagers have increasingly turned to fisheries as the second most available natural resource in the region. Most landless people depend on fishing, and the poorest rely on catching mud crabs. Many people now spend their lives moving from village to village, fishing and crabbing.

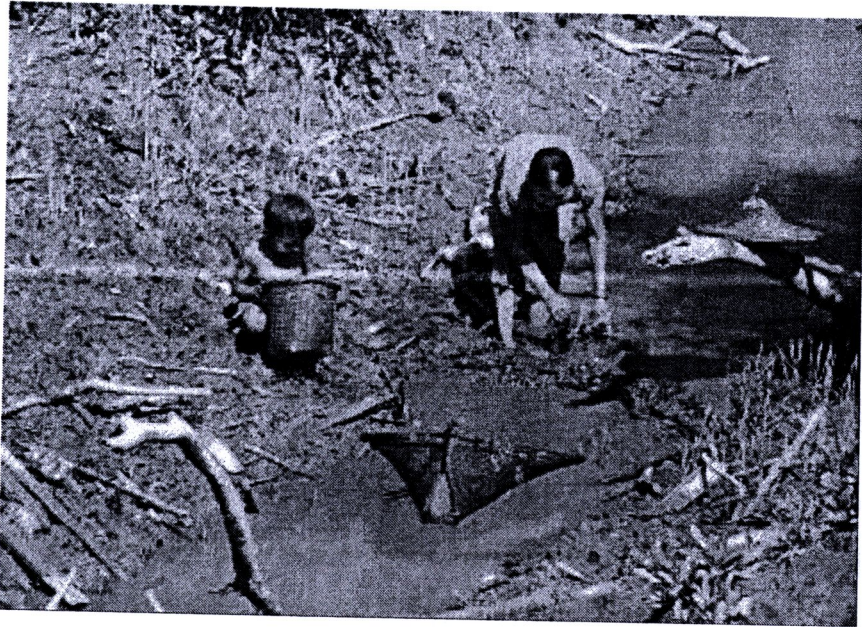


Figure 6.3: Crabbing - An Everyday Practice

Villagers use the boat service to bring local products such as bamboo shoots, fish paste, fish, prawn, crab and some forest products, to the town. On the return trip they bring back materials from the town that are not available in the village. When they bring fresh fish, crabs and prawns, they use a carrier box filled with ice, so when they come back from the town they also bring ice in large amounts by boat, because there is no ice factory or electricity in the village.

Pigs and chickens are bred on a small scale in the village; some households are able to breed only one pig. Most of the households breed domestic animals, such as one or two pigs and some chickens for their food and earnings. When I visited the village, I found pigs being bred in three households and more than ten households breeding chickens.

There is a requirement which mandates that anyone who wishes to go fishing should first obtain a permit. Businessmen from the urban areas make good capital investments when they come to the Delta to catch fish, crabs, shrimps and other marine resources, and with a license from the Fishery Department already in hand, they arrive at the villages and agree sub-tenders with businessmen in the area. Some big businessmen also employ brokers in the villages, who act as their agents. Many of

the poor villagers work in these agencies for their daily income; the creeks, streams and rivers belong to investors for their concessionary use.

The businessmen are able to operate the whole year, because they can invest large sums of money and win the tenders for catching fish. Because of this, the local villagers have little opportunity to catch fish freely and so have become poorer and poorer. If villagers catch fish in the streams and rivers, then there is the chance they will be arrested by the local authorities. Merchants and businessmen send the good quality marine products to Yangon, and after that the products are sent abroad to earn foreign currency. As a result of this, these businessmen are becoming richer on daily basis.

Women and young girls also make nipa thatches in the village. Men go to the nipa forest every morning, early, to cut nipa leaves and bring them to their house in the evening, when they return to the forest to look for firewood, so they have a lot of free time during the day. As a result, they struggle to make ends meet, and every person must work to add to the household income. Even children have to work, leading to a lack of formal education - a bad situation for the younger generation in the village.

Some even live on boats throughout the year, as much cultivated land has become unusable as a result of the high levels of salinity. With the creation of big boats, the business of trading river or sea sand has become popular - the sand is transported through inland waterways and the returning vessels bring back fresh water.

6.2 Local People's Response to Changes both in the Environment and Socio-Economic Conditions

The deltaic and coastal mangroves are important breeding grounds for aquatic species, as they enrich the fishing grounds and provide the local people with food, shelter, small timber, fuel wood and other forest products. This vitally important mangrove ecosystem has degraded alarmingly due to over-exploitation, agricultural encroachment and shrimp farming.

A more transparent and clear-cut land-use policy would help to boost the expansion of community forestry in the Ayeyarwaddy Delta, as, in reality, the paddy

purchase policy inside the Mangrove reserves works against the protection of the trees. Though paddy cultivation inside the Forest Reserve is considered unlawful by forestry standards, the understanding is that paddy can be grown as long as the grower meets the sales quota for rice. While paddy production is receiving such a high priority in the Delta, community forestry can only be established on low fertility soil with a salinity problem. From the view of a poor family, it is much more suitable and reasonable to reclaim such land than to reclaim fertile land; nevertheless, there are some dedicated communities who really want their mangroves back in the Delta, and it is an encouraging sign that promoting community forestry activities in the Ayeyarwaddy Delta might well lead towards restoration of the mangrove ecosystems.

With the rapid increase in population, the socio-economic situation is changing dynamically in Myanmar, such that the design of resource management needs to be changed in places where there is high population pressure. Community forestry, a new approach based on people's participation, has emerged in the Ayeyarwaddy Delta in order to assist sustainable forest management. A wing of the Forest Department is not capable of extending its program down to the grassroots level, as communication and understanding between government officials and the local communities is often not so effective or cordial; there is hardly any transparency between them. Without the proper remedial measures being undertaken immediately, these mangrove forests are going to disappear very soon. Conservation and rehabilitation of the mangrove forest are both essential in order to supply local fuel wood demand and restore the mangrove ecosystem. Nowadays, most of the people living in the Delta face shortages of fuel wood, as well as the materials required for housing, farming and fishing.

The villagers in Oakpo-Kwin-Chaung have developed local knowledge of the mangrove forests over a long period, and the forests have been used by many different user groups. With changes taking place in the environment and socio-economic conditions, intensive shrimp farming, the extension of cultivated land and over-exploitation of forest products have taken place, and these activities are part of the major changes taking place within the mangrove forest areas and that have led to their

degradation, a loss of forest cover and ecological disturbance. Furthermore, these activities have affected the mangrove forest dwellers. The decrease in the number of marine animals, a scarcity of timber for construction and other purposes, and the environmental problems caused by intensive shrimp farming, have affected the living conditions of villagers. In this regard, the use of the mangrove forest by villagers and its local management has changed over time due to the changes in the villagers' usage rights in the forest. My research has revealed that the use of mangrove species has adapted to correspond with the changes in circumstances, showing that the local people themselves have much knowledge, something which enables them to cope with the problems they face in terms of the use of mangrove forest resources.

According to informal conversations with the villagers during my data collection exercise, it seems that the village leader is respected by villagers as the leader of the community. He is very helpful whenever his people are in trouble and come to ask for his assistance, and this has led to an appreciation of him from the point of view of the villagers. To achieve the establishment of community mangrove forests, cooperation from the villagers with respect to tree planting is needed. Previously, information about the establishment of a community mangrove forest in the village was provided to the villagers and the leader asked for their cooperation. Based on his role as the community leader, the villagers joined in with the tree planting for the community forest. During my household interviews, I asked some respondents about who had been involved in the successful tree planting activities for the community forest. They said that they themselves had played an important part in tree planting and that without their participation, those trees in the community mangrove forest would not be there. Although most of the villagers were not involved at the beginning of the establishment of the community forest, they now have the right to use the trees for 30 years. More recently, the villagers, both men and women, have joined in with all the activities carried out in the community mangrove forest, such as taking part in the tree planting and carrying out monthly tree maintenance. For the local government agencies, it seems that the community forestry was established in order to serve as a source of wood for the community in the future, to recover the degraded mangrove forest area and to maintain the ecological balance. From the local NGO point of view, the community mangrove forest is one of the solutions to

problems related to the reduction of marine animals, helping to improve the well-being of the local community and to conserve coastal resources.

Since mangrove forest and ecosystem degradation began in the Delta, local communities have faced difficulties in maintaining their livelihood, finding it very difficult to catch fish, crabs, shrimp and shells in the streams, creeks and rivers. This has happened because many forests have been destroyed very quickly over the last three decades through agricultural encroachment, shrimp farming and charcoal making. As a result, the villagers often consider how they can recover from these problems; the local communities want to reforest the land included within their village area, such as the degraded forest, gaps in the forest and the fallow land.

Oakpo-kwin-Chaung village is located within the *Pyindaye* reserved forest. In fact, the forest reserve area is directly managed by the Forest Department, and local people cannot access the forest reserve without permission. Even since implementation of the community forestry initiative projects, people require permission from the Forest Department in order to enter. Farmers from Oakpo-Kwin-Chaung village have realized that their only option in such areas is to grow mangrove tree species; however, it seems that this is not possible as the abandoned paddy fields are in the state-owned forest reserve and once the mangroves are re-established and revert to the original forest state, the Government is likely to take over the forested land, since the local occupants have no legal rights over it. Oapo-Kwin-Chaung village was established as a community forest, with local peoples' participation and under the rules of the community forestry instruction, plus with support from local and international organizations. The duration of the land-lease for establishment of the community forest was initially set at 30 years, but this might be extended if performance is satisfactory and if it is also desired by the local community. It is hoped that this co-management of natural and man-made forests by the local community and the Forest Department, as well as the sharing the benefits among the communities, will encourage active participation in restoring the degraded mangroves. Ownership of the land for at least 30 years means a lot to the local community, especially for the landless people who would not normally own a piece of land after planting mangroves.

However, the mangrove forests ultimately belong to the Government, and by law, the fishermen, dried shrimp makers, aquaculture farmers, shrimp farmers and charcoal makers have no legal rights to use them; therefore, these people have to apply to use specific mangrove forest resources, which are regarded as legitimate in and around their village area. In contrast, the charcoal making concessionaire is a user who has legal land use rights granted by the Government.

The fishermen are villagers who depend on the mangrove forest as a source of marine animals for their income; the dried shrimp makers are villagers who depend on the mangrove forest as a source of fuel wood and for their shrimp supply, while the aquaculture farmers gain benefits from the mangrove forest in terms of timber for cage construction and for its ecological services. However, these groups are generally similar in terms of the various benefits they gain from the forest, such as food, fuel wood and timber. The commercial charcoal making concessionary is a villager who uses the mangrove forest for a specific purpose. Fishing in this study refers to the catching of any types of marine animal from the rivers, creeks and canals located in the mangrove forest. The availability of the marine animals in these areas is directly related to the presence of the mangrove forest, and so fishing is one type of indirect mangrove forest use, and is now the main occupation of the villagers in Oakpo-Kwin-Chaung, even with mangrove degradation and changes to the environment and socio-economic conditions. Based on information I gained from the village head, 76 households (63.59%) out of a total of 121 earn their living from fishing activities, as shrimps and crabs that live in the mangrove forest, as well as fish, are caught by these fishermen.

Snails are generally found attached to the stems, roots and leaves of the mangroves, and they are collected by the women and children for food, when they have free time. Any surplus left over after household consumption is then sent to Bogale for sale. Some households cannot earn their living from fishing, because of the scarcity of fish, but still go fishing for their own consumption every day. When fishing, a nylon net is placed along the canal in the late afternoon and picked up the next morning, hopefully containing different kinds of fish; thus, the ecological services provided by the mangrove forest reduces the villagers' daily food expenses.

New houses constructed over the last three decades have been made of swan-wood purchased from the local sawmill, due to the scarcity of timber from the mangrove forest and terrestrial forest around the village. In fact, the mill does not have legal permission from the Forest Department; however, there are many big trees around the village and the Forest Department ignores the use of this forest resource by the local villagers. Since the mangrove forests have been destroyed, the Forest Department has not allowed use of mangrove resources by the villagers; it is illegal. Local villagers believe that continuation of the cutting of wood for charcoal production has been a key cause of mangrove forest degradation. Houses built in the past, over three decades ago, were made of a hard wood species taken from the mangrove forest called *Xylocarpus maluccensis*, and this was used for making beams and floors; however, for the very poor villagers, the small trunks of some species like *Rhizophora* were used for making the floor and the roof frame.

Although wood is not used for fuel as much now, the mangrove forest is still the main source of fuel wood for some villagers, especially the dried fish and shrimp makers. Villagers prefer to use charcoal and fuel efficient stoves, because they consume less fuel wood and are more convenient; nevertheless, some households who cannot afford the cost of charcoal and fuel efficient stoves still use fuel wood, but it is hard to find around the village. In the past, fuel wood was collected from the mangrove forest around their houses, and even now, collecting fuel wood does not seem to be a major problem for the villagers, as dead wood, dried branches and stumps are collected from the remaining mangrove forests two or three kilometers from their village. In addition, some households collect fuel wood from their small orchards.

Big mangrove trees are hardly to be found in the mangrove forest around the village anymore, and it is known among the villagers that workers are hired for wood cutting, in order to make shrimp ponds for the businessmen and provide wood for the illegal charcoal makers. Sometimes they go to cut mangrove trees from the reserved forest or somewhere outside the forest in order to obtain the big trees needed to supply the charcoal kilns. The size of wood used for charcoal making now has a diameter of only two and a half inches on average, due to the degradation of mangrove forests in the area, and my household interviews showed that most of the

respondents have the same opinion; that the charcoal kilns are the cause of the disappearance of big trees in the mangrove forest near the village. Respondents over 45 years old remember that when they were children there were many big mangrove trees with a diameter of one meter or more; some trees were so big that it took three men holding their hands together to encircle the tree. These big trees have gradually disappeared from the mangrove forests as the years have passed, and this has led to a scarcity of wood for house construction and other purposes.

6.3 Local Community Participation in Establishing the Community Forestry

The role of NGOs is to bridge this gap, give support where necessary and help in building trust between local communities and the project, as well as Forest Department personnel. Some forest personnel feel that these NGO groups are interfering and intruding into their management and administration, though the Forest Resource Environment Development and Conservation Association (FREDA), worked successfully with the Forest Department and its forest staff in order to launch this Community Forest Program. FREDA fully understands that a participatory approach has to be applied, not just with the local communities but also with the forest personnel and local authorities. FREDA has implemented the project in accordance with the Community Forestry Instructions (CFIs) issued by the Myanmar Forest Department in 1995. Land access will be permitted for up to 30 years, to those people who plant trees in accordance with the CFI, and this has attracted rural people to actively participate in restoring the degraded and denuded mangroves. FREDA is a non-political, non-profit and non-government organization (NGO) within Myanmar's forestry sector, and its strength is its expertise, dedication and dynamism. Founded in 1996, FREDA currently has more than 400 members, including foresters, botanists, agronomists, zoologists, veterinary scientists and hydro-geologists, among others. FREDA is engaged in a wide range of activities, such as socio-economic surveys for rural development, planning for community participation in reforestation and forest conservation activities - especially in areas dominated by slash-and-burn agriculture, the promotion of sustainable forest management, the introduction of appropriate methodology for improved land use systems for rural community development, the

implementation of integrated watershed management activities for natural disaster preparedness and climate change adaption, the restoration of degraded mangrove ecosystems in the Delta, wildlife conservation and wildlife products trade surveys, and giving support to scholars in environmental science at the M.Sc. and Ph.D levels, in partnership with the donors and universities concerned.



Figure 6.4: Community Forest Plantation in Oakpo-Kwin-Chaung Village

Projects and programs are primarily implemented with the co-operation of the international NGOs and UN agencies, and FREDa began implementing a five-year mangrove reforestation project in the Southern Pyindaye Reserved Forest in 1999. The project, which aimed to establish mangrove plantations based on the CFI, was an “integrated type with continuous support to alleviate the constraints and difficulties of CF user group members”, comprising: 1) mangrove seedling production by CF user groups for sale and self-plantation, 2) the distribution of sewing machines to women’s groups under the CF user groups, 3) fruit and vegetable production using agroforestry techniques, 4) school renovations, and 5) CF plantation and natural forest operations.

FREDa works with support in the form of cash and in-kind payments for the benefit of the plantations, using its technical expertise for planting, to help form user

groups and obtain 30-year land tenure rights from the Forest Department. Along with financial assistance from Action for Mangrove Reforestation Japan, FREDa ran a program to reforest 600 ha of mangrove plantations between 1999 and 2003 in the southern section of *Pyindaye* reserved forest. After the project ended in 2003, and in light of the excellent contribution that came from the local villagers, as well as the success of mangrove reforestation in the area, FREDa decided to continue the project - to reforest 700 ha of mangrove species.

There are three main components to this project: community participation, the establishment of mangrove forest nurseries and the establishment of plantations. For the plantations, when they choose tree species' to plant, the local communities select the suitable tree species' themselves in accordance with their local knowledge and needs, though sometimes the Forest Department and FREDa consult the local villagers on tree species' selection. User groups have been formed in the village in order to actively participate in the reforestation activities, and an extension worker has also been appointed for the village - responsible for running training programs involved in the transfer of technology, developing income generation activities, holding regular meetings and inspecting the field work. User group members' visit other successful community forestry activity areas in order to learn from them, in areas where progress in terms of community forestry activities can be observed. During 1999, the first year of the development program in the village, the NGO purchased several thousand seedlings (about 150,000) from the Forest Department nursery, to distribute to local villagers for the planting of 150 ha of mangroves, such that by 2001, Oakpo-Kwin-Chaung village had the capacity to produce 500,000 seedlings. The Natural Forest Improvement Operation (NFIO) also conducted a kind of assisted natural regeneration in this village, in which 95 ha of community woodlot were established with local villagers' participation. Community Forestry Certificates were awarded to all the user groups, and now the user groups are looking after their mangrove forests very effectively. Community forestry fairly easily attracts collaboration from the local communities, since they know that the projects are there to help them and that they gain ownership of the mangrove plantations for 30 years. This is a very attractive aspect for them. However, at the beginning of the project there was a problem deciding which species suited the abandoned paddy fields or

fallow land best, but after five or six years experience under the project, all participants are now quite confident of how reforestation of the mangrove species in the abandoned paddy fields should take place. In order to set up the community forestry program, three groups were closely involved: the local community, the government agencies and NGOs. FREDA is now more concerned about the impacts of shrimp aquaculture than agricultural encroachment, as this can be much more destructive to the mangrove forests.

6.4 Local Communities' Future Livelihood Perspectives

The villagers' daily life in this area depends totally on the mangrove forest for the extraction of fuel wood, fish, crab, shrimp, or shells and for processing mangrove products for their daily commodities, or for market. Even the farmers get part of their earnings through fishing, or catching fish or prawns, which may account for a major part of their income. Villagers have different perspectives of their future, with their interest in the use of the mangrove forest depending on the type of benefit they gain from the community forests. Life in the area is closely linked with the mangroves, or with mangrove based products. There are no conflicts or problems among user groups, and the local communities are well aware that their daily catch of fish is declining due to the rate of depletion of mangrove areas, and that mangrove forests act as a natural barrier against floods and storms, protecting people in the coastal regions. Some farmers have noticed that their paddy production has fallen year on year, because the farm soil has become more acidic and they have also noticed climatic changes taking place over the last decade. They wish to regenerate the forest cover around their village, so have been very active in the establishment of the community plantations in the destroyed forest areas. They hope to establish more and more community forests every year, but one problem is that they do not have enough land to establish as many community forest plantations as they would like. After my field visits and interviews with the villagers, I found there to be some conflict in terms of land use between the government agencies in the village, and between them and the villagers.

Villagers have different reasons to access their community woodlot, and in the village, villagers grow all the mangrove tree species on community plantations. These

mangrove tree species are very fast growing and after they mature, one can use them in a multitude of ways, such as for boat making, making fishing gear, house building and charcoal making, among other things. Villagers need to access forest products for their future, and they especially want to extract timber from their own forests for house building and bridge construction. Moreover, the local fishermen need poles to use for their fishing gear, and some people also need forest products for making charcoal, both for domestic use and for their businesses when they have to sell those in the city. As a result, the local villagers have enjoyed establishing mangrove forest plantations around the village, because after five years growing mangrove tree species', they can start to extract logs large enough to be used as posts and poles. This is called a thinning operation, and is carried out for treatment of their plantation. After five thinning activities, they can obtain commercial-sized logs.

When I met with the local villagers, the village leader, who is a member of this village tract, spoke about tsunami issues. On December 26th 2004, a tsunami hit the mangrove regions and other coastal forest ecosystems, and the ecological damage inflicted was extensive, though it varied from place to place. Tsunamis typically reach the shore with tremendous amounts of energy and can strip beaches of sand, together with trees and other coastal vegetation. Around the village, vast tracts of mangrove and others coastal forest ecosystems have been destroyed, and it is anticipated that this will pose a severe long term threat to the area, not only in terms of forest and mangrove biodiversity conservation, but also in terms of the ability of the ecosystem to support local economies and livelihoods. Some places might also be exposed to the risk of increased salinity, which in turn could affect agricultural production. Moreover, near the village and in other places, the salinity problem is significant and widespread and could potentially leave the soil unfit for any kind of vegetation growth in the future, which could in turn significantly increase the local villagers' vulnerability to soil erosion and the impacts of climate change, as well as food insecurity. Nowadays, local villagers realize the importance of the mangrove forests and their ecology, of their contribution in terms of ecological functions and mangrove forest products. They know the relationship between the mangrove ecosystem and the marine products provided by the mangrove forests.

Hence, in order to promote community forestry successfully, there is a need for research in the area of species' and site selection, planting methods and simple management techniques, in order to suit the needs of the communities living in and around the mangrove forests. Community forests in the mangroves are planted and managed by the community themselves, so that they can have the right to use the forest products after five years without having to receive permission from the local Forest Department. The management of community forests is carried out by the local community, with advice from the local Forest Department and NGOs in the early stages, such as how to apply for a rafting permit to sell forest products to other places, how to get a license for timber cutting and how to get permission for charcoal making - for local consumption. The responsibility of the Forest Department is to manage and support the implementation of community forestry activities by the user groups. The stakeholders in the community forestry activities are thus principally the Forest Department, and the community forestry user groups formed by the local villagers to implement community forestry activities.

6.5 Summary

The villagers realize the importance of the mangrove forests - their contribution in terms of ecological functions and the products they provide; moreover, they understand the relationship between the mangrove ecosystems and the availability of marine products. This knowledge has helped the local community to understand the causes of the problems that have occurred within the mangrove forests in their area. The establishment of the Oakpo-Kwin-Chaung community mangrove forest is one solution to such problems.

In order to set up a successful community forestry program, three parties need to be involved in the early stages, because this will influence the level of success of the program in the future: the community, the local NGO and government agencies, and the village leader, the community and government agencies play a significant role in driving the success or otherwise of community mangrove forest initiatives. However, these three actors must interact with one another. The village head man, as the leader, partly influences the participation of the villagers; meanwhile, the relationship between the village head man and the government officer indirectly

affects the level of participation of the villagers in tree planting and maintenance activities.

Community forestry projects are long-term in nature - benefits are only enjoyed after a long period; therefore, if they are to be implemented by local people, they need to produce both short- and long-term benefits. In this context, the financial and technical support of international organizations and NGOs, the utmost efforts of local people, plus interest from government personnel all substantially contribute to the promotion and success of community forestry initiatives.