

Natural Resources and Livelihood of Chiba Village Tract, Shwebo Township, Sagaing Region

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Abstract

Livelihood is the capabilities, assets and activities required for a means of living. The specific objectives of this study are to describe the livelihood of rural dwellers, to analyze contextual factors associated with livelihoods of rural area in Shwebo Township. A community based cross-sectional, case study descriptive design was conducted in this study. Qualitative data collection methods were applied: thus informal group interview (IGI), focus group discussion (FGD), key informant interview (KII) and in-depth interview (IDI) were carried out. Growing paddy does not make for year-round income and all members of social classes have alternative livelihoods on-farm and off-farm activities. Dependence on accessibility to natural resources livelihood patterns and livelihood strategies branch out differently. For gradual yearly degradation of fertile top soil more chemical fertilizers are needed and rice farmers have to bear more costs. The families in the lower class access such natural resources as edible wild plants, fish, eels, paddy-fielded mouse and fuel wood for their own use and livelihood. When MMu Canal is without water those families commercially collect sand out of it for extra income. Consequences of use of chemical fertilizer and electric shock to fish have become fish species are depleted year by year. So, all social classes are found to be earning their livelihood, being related directly or indirectly with natural resources.

Key words: livelihood, assets, natural resources, coping strategies

Introduction

Human beings have to always struggle for survival. Widespread areas of the world, they have different existential forms dependent on where they live, but their basic needs are the same. Those basic needs, connected with human's survival, cover food, shelter and physical defenses. As people struggle to fulfill family's basic needs their ways of life as well as livelihoods diversify. Chambers defines the term Livelihood as "the capabilities, assets and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets and provides sustainable livelihood opportunities for the next generation and which contribute net benefits to other livelihoods at the local and global levels in the long and short term" (Chamber & Conway, 1991).

Rural community is one of the strengths in country building. To members of rural society mostly existing on agriculture livelihood strategies go different based on accessibility of assets. About (70) percent of Myanmar populations are farmers in rural areas. Agriculture sector is the main prop to Myanmar's economic structure. Rice is the staple food of Myanmar people and paddy cultivation is the livelihood of majority of cultivators in the country.

The aim of this study is to explore the effect of Natural Resources on livelihood on rural community. Therefore Shwebo Township, Upper Granary of Myanmar as well as

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producer of Shwebo Baygya rice (species of rice) commanding the biggest market in paddies, has been made research study area.

Methodology

A community based cross-sectional, case study, descriptive design was conducted in this study. Qualitative data collection methods applied: thus, Informal Group Interview (IGI), Key Informant Interview (KII), In Depth Interview (IDI), Focus Group Discussion (FGD), and visual technique like social mapping. At each IGI session an interview of 13 respondents such as village elders, bachelors' leader, chaperon, and youths was conducted. During the IGI, social mapping was performed and household of lower class identified. Then request was made to select 4 married males and 5 married female from the lower class household indicated in the social map. According to social mapping of Chiba (North) and Chiba (South) are three social classes. Key Informant Interview was conducted with village elders, agricultural land owners, lower class. For IDI; Chiba (North) and Chiba (South) was asked of villagers aged above 20 with all social classes. Moreover, interviews were made of study area dwelling native aged above 15 on livelihood and ways of life. Four FGD sessions, each at Chiba (North) and Chiba (South) villages, were held of 4 married male and 5 married female, aged 18-55 years, from the lower class.

Natural Resources and Livelihood

Chiba village lies about three miles to the west of Shwebo Township. According to social mapping of Chiba (North), there are three social classes. In the upper class are those with good economic activities working above 10 acres of paddy land. The middle class is those owning less than 10 acres of paddy land, and loom operators. The upper and middle classes consists of owners of motorcar, motorcycle and marketers of paddy or house owners with daily income. The lower class comprises odd-job takers. At Chiba (North) the middle class has the most numerous members. Chiba (North) village has various forms of livelihood exist, namely; paddy growing, agriculture other than paddy, gardening, looms, pottery and work as a daily-wage earner.

The Chiba (South) village has three social classes. The upper class consists of owners of paddy land, motorcar, and motorcycle, and power loom, marketers of paddy or house owners. Middle class consists of owners of motorcar, motorcycle and marketers of paddy or house owners with daily income. The lower class comprises odd-job takers. The middle class has the most numerous members in that village. Chiba (South) with smaller housing plots have the houses standing more closely. Chiba (South) village has various forms of livelihood exist, namely; paddy growing, gardening, looms, rice-milling and work as a daily-wage earner.

Natural Capital is created when human beings use natural resources in adaptation to make their living possible. Natural Capital refers essentially to the resources found in the natural environment. Out of the natural resources, only those compatible with the local livelihoods are use Chiba (North) and Chiba (South) villages, being dependent on agriculture for their livelihoods, mainly use land, climate, water, soil, flora and fauna out of the natural resources.

Land

Chiba (North) and Chiba (South) villages lie in Shwebo Township, which in turn falls in the wide plains of the Dry Zone in Central Myanmar. Paddy land is major among different kinds of farm land, and most of the paddy land and garden land lie to the west of Shwebo Township and to the east of Mu River. That paddy land is too sticky that it remains waterlogged during the monsoon. The paddy land at Chiba (North) and Chiba (South) villages is uneven so human power is mainly used to grow paddy. Ownership of land is hereditary. If it

is transferred from parents to children no needs are required; but they need to be made on transference of land ownership to others and are prepared with the help of buyer, seller, and village committee chairman and land survey personnel.

Most households at Chiba (North) and Chiba (South) villages have farming as their livelihoods which are mainly based on agriculture. Farmland indicates their social and economic status and it enhance their position in the society. Most farmland owners are hereditary. On an average cultivator owns 30 acres of paddy field at the most, each of which produce 70-80 baskets (tin) of paddy if natural disasters are prevalent. Major commercial crop is paddy, with the strains of Shwebo-Baygyar (ရွှေဘိုဘေးကြား), IR 747 (အိုင်အာ-၇၄၇), Shwe Thwe Yin (ရွှေသွယ်ရှင်) and Pale Thwe (ပုလဲသွယ်). Every year two crops of paddy (summer and monsoon) grown, and most paddy produced as sold to brokers. Some villagers go to town to sell it and keep it in storage to await better prices. Landless villagers are highly dependent on agricultural works by doing as a physical labor (transplanting, harvesting, ploughing, and weeding) is paid kyats 2000-3500 per day.

Most upper and middle classes have had shocks for various reasons. One of them: when their summer paddy falls victim to plant disease it is sprinkled with pesticides. If the bacteria do not die easily stronger chemicals are used at more cost. The stronger pesticides kill off all life good or bad in the fields. Sometimes most fields are to be sprinkled with pesticides and the foul smell there from pervades the villages. The insecticide containers are usually accompanied by preventive gear for the user but, when the farmers buy them that gear is missing. Another trouble to farmers is the need to suppress the pest of field mouse.

Small-scale paddy farmers who own 1-3 acres of land only are often faced with sudden damages caused by pests or family members who are taken ill. It is a hard problem to them. This locality falling in the rain-scarce zone is mainly dependent on irrigation. When this service comes late the farmers have to work the land faster requiring, more farmlands for planting. Then the latter become scarce because of more demand for them.

Whatever the shock, it can mainly be alleviated by money, which is borrowed at high interest. That goes for kyats 2000 per kyats 10000 borrowed. Small scale paddy farmers are in debt every year because once they have borrowed money they can hardly pay back. Most of them become daily-wage farmhands for farm-owning employers. Some small scale farmers assert that they are even thinking to take up money-lending with a capital to be got after selling their farms. Almost always burdened with debt, they find it difficult to store rice for their own consumption. They often have to consume broken and damaged rice left behind after milling their paddy. Some small scale farmers have to sell off their farmland to pay back their debt, and then become daily-wage farmlands.

The lower class, when stricken with shock, has to draw advance money from the farmland-owner. In so doing, he receives at the wage rate of kyats 900-1000 per day instead of the regular kyats 2000-2500 per day. Thus some of their labor is sacrificed for nothing for themselves. They work year round but remain poor. Most daily-wage workers go off to Kawlin, Hoping, Monhyin, Myitkyina and the villages in Shwebo Township environs as migrant workers. On their return home their earnings are soon used up as they have to pay back their debts. Daily-wage workers try to solve health and social emergencies by drawing advance wages from the farmland owner. When faced with serious troubles they sell off their house and land. They have to live outside of the village as the homeless. Their busiest months are July, August, January and February while they find it most difficult to get employment in November.

Chiba (North) village there is a few potters who make use of clay, a natural resource. They produce flower vases and traditional flower pots to welcome Myanmar New Year. Those female potters used to get their clay out of old tanks and ditches but now hire workers to get the clay for fear of leeches living in those tanks and ditches. The potters do not work during the monsoon as newly made pots are not easy to dry up then. Working on self-manageable basis, they produce about 100 vases a day. Newly made pots are left to dry up in sunshine; next day they are baked the whole night in a fire made of paddy husks, straw and dried cow dung, resulting in semi-manufactured pots. These semi-manufactures are sold in Shwebo Township at kyats 40 apiece. These goods, on becoming manufactured products after being decorated in enamel paint, are sold at kyats 500 apiece. The potters are skilled enough to produce finished products but the brokers are unwilling to buy them. But a few finished products of there are bought by local villagers at kyats 500 apiece, mostly in December.



Figure 1. Pottery

Sand extraction and marketing is carried out at Chiba (North) and Chiba (South) villages. This is not a livelihood per se, but taken up by people with monetary means for extra income, through use of machines on Mu Canal bed when the water in it has dried up. Sometimes this sand is given for free to be used in village for free to be used in village development works.

Water

Water use plays an important role in agriculture development Chiba (North) and Chiba (South) villages which lie in the belt of scant rainfall. Chiba (North) and Chiba (South) villages are mainly dependent on the Mu River for their water. The rainfall at Chiba (North) and Chiba (South) villages is not enough for agriculture so they have to mainly depend on irrigated water for that purpose. Those villages lying to the west of Shwebo Township received irrigated water out of Kabo Dam via the Shwebo Myaungmataw (main canal). The Shwebo Myaungmataw near Kabo village is a diversion canal of Kabo Dam. Meant to give enough water to Shwebo Township agriculture, the main canal was first built in 1901 and completed in 1905 water from Shwebo-Myaungmataw flows by two diversion canals, 14 feeder canals, and 20 minors. The total length of canals is 149.46 miles. The irrigated area thanks to Shwebo Myaungmataw is 693 acres in Kanbalu Township, 30243 acres in Khin-Oo Township and 7949 acres in Shwebo Township. The Shwebo Myaungmataw itself is 143409 long. It has five Shwebo feeder canals, out of which Shwebo feeder canal No(6) is 52854 feet, Shwebo feeder canal No(2) is 25785 feet, Shwebo feeder canal No(6-Ka) 7861 feet, Shwebo feeder canal No(7) is 53400 feet, and Shwebo feeder canal No(7-Ka) is 16700 feet long. Chiba (North) and Chiba (South) villages rely on Shwebo feeder canal No (6, 6-Ka, 7, 7-Ka) for their irrigation and water of household use. Some people of Chiba (North) and Chiba (South) villages store rainwater in large glazed pots for year-long use of boiling it for drinking.

When enough irrigation is not available for all paddy fields in need Department of Irrigation issues a notice one month beforehand via Village Administrators saying supply of irrigation water will be suspended. Most farmers forgo any farming during the time when irrigation water is suspended. At that time a minority of farmers, suspended. At that time a minority of farmers, suppressing their wish to grow crops, forgo farming for fear of a loss due to field mice. When all agricultural land is being grown the destruction caused by rats is shared by all farmers and the extent of destruction for each becomes tolerable. When growing of crops is being suspended the farmers do Laepyin (mending their cropland whereby small plots are combined into a large field through repair of dykes, rat holes and plugged and plants which might shelter rats are cut down to be turned into firewood). For this suspension of crop land use the erosion of top soil is alleviated. The lower class, instead of serving as farm hands, is hired to dig up the ground or carry loose earth.

Soil

Soil is most important to farmers for their livelihood. Dark Compact Soil is mainly found in Chiba (North) and Chiba (South) villages. The soil at Chiba (North) and Chiba (South) villages, having been used continually for years, has become degraded, the farmers claim. With no time to be left aside, that soil needs to be remedied. Back in 2000 some spots needed to be scattered with one unit of fertilizer, but now five units of fertilizer are needed. Natural fertilizer is effective but enough of it is not available for purchase. Chemical fertilizers have to be used also, but the necessary amount of it varies from place to place. Moreover, as a consequence of use of chemical fertilizers birds and fishes have become scarce, the farmers claim. They also say that Chiba (North) and Chiba (South) villages, with their less breeding of cattle and livestock, now have scarce humus for farming.

Livestock Breeding

Chiba (North) and Chiba (South) villages are engaged in growing paddies so their fields and ditches contain fishes, like, tilapia, eel. Farmhands used to fish in the ditches and streams, always successfully but this activity goes against the law, and they could be dealt with according to law. Yet they continue it in stealth, leading to a scarcity of fish, land crab and useful insects in the wet fields. Moreover, they often use Chinese-made electric shock to fish without regard for fishing season so that fish eggs, fry and useful insects also are killed. The problem is aggravated by the use of powerful insecticides, the local people say. Near the paddy fields duck breeders operate, some of them are local and some are outsiders. Migrant duck breeders have become because feed is cheap, but the ducks eat up insects, fish and land crabs living in the fields, and when they have entered and fed in the nurseries the former set up flagstuffs in the fields to show where nurseries lie. However duck herders can work in the fields after the harvest. At Chiba (North) and Chiba (South) villages, livestock breeding cattle, buffalo, pig, goat and poultry is followed on self-manageable basis, partly to support the villagers' farming work.

The locals' farming used to include breeding of cattle and milk cows as there were pastures on the sides of feeder canals but it has discontinued since 2000 when the pastures were changed into farmland. Moreover the paddy land over years have used up the soil and oxen are unable to struggle in the changed fields, so cheaper buffaloes are bred as they can negotiate the changed fields. Poultry rising has also lessened for fear that they might intrude into others' compounds and it will cost a lot to fence in the chickens. Pig breeding has also lessened since the era of Burma Socialist Program Party (1962-1988) when broken rice and bran became scarce thanks to the duty of paddy farmers to pay taxes in the form of paddy. Today there is a fish-breeding pond at Chiba (North) village.

Flora and Fauna

The growth of flora in a certain area depends on water, land topography, climate and the type of soil. Chiba(North) and Chiba(South) villages, lying in the Dry Zone with scarce rainfall and hot climate, have no deep forests near them, but only pockets of tropical dry forest. This irrigated region of level plains has trees like *Acacia leucophloea* tamarind, rain tree, and mango but they are sparsely scattered. Again scattered among those big trees are xyrophytes such as, toddy palm, kantara, kyasharu, hsuphyu, cactus, and lead tree, often standing in the form of fencing.



Figure 2. Gathering of Wild Plants

A few medicinal plants, like moonseed vine and yellow, white, and red plants (*zinywayseit*) also can be found. A few daily wage workers often gather red plants whole, to be sold at the traditional medicine shop in Shwebo Township. Owners of farmland can have firewood out of the trees they have grown on their land, but most people with no farmland have to buy firewood from sellers coming from Kyaukmyaung Township.



Figure 3(a&b). Fishing

At the creeks and fields around Chiba (North) and Chiba (South) villages a variety of fishes, land crab, common moorhen, phaungtoat, the little egret, species of wild goose and snipe are found. There are also migratory birds. Poisonous snakes like viper and cobra exist, in addition to a great number of field mice.

Coping strategies are composed of the various activities undertaken by the household to generate a living. People combine activities to meet their various needs at different time and on different assets. A changing asset may alter strategies depending on the policies and institutions at livelihood.

A 38 years old eel catching man elaborated on the changing pattern of his occupations thus:

“I take up farm work where it is available. Out of the season I set fish traps. Currently it is suspended due to lack of water in the Mu canal. But setting fish traps for the eel still works. Catching the eel is viable for about ten months, from Tabodwe to Tazaungmone. We eel catchers are self-disciplined we never take others’ traps. 3-4 eels are often caught in a trap though none is caught sometimes. My normal catch per day is 3-4 viss. The fish is worth kyats 6500 per viss if sold out of home. It could bring kyats 7500 on Shwebo market. In a pot of water the eel can survive for more than a month. Sometimes I put my fish on hold before selling it. Demand is strong but the fish has become scarce. I started catching eels in 2010, when even up to 7-8 viss of them were caught in a day. I agree that it is demeritorious work but I can’t help catching fish for a living. An elder said the eel could go extinct in 3-4 years.”

A male odd-work taker, aged 25, said:

“I’m making mouse traps for the paddy field rat. This occupation allows no recess in any month. At 3:00 p.m. I start setting 50-70 traps in the neighborhood of paddy fields. I recollect them at about 6:00 a.m. but the traps are only half successful. The meat is sold locally, normally bringing me some 2000 kyats per day. Sometimes the meat produced is just enough for our meals.”

Division of Labor by Gender

Chiba (North) and Chiba (South) villages farming as major livelihood is based on the labor of family members. In this division of labor different patterns of livelihood emerges for male and female. Table (1) gives different livelihood patterns of male and female and the livelihoods followed in order of favor.

Table (1) Livelihood by Gender

No	Male	Female
1	Lead farming	Housekeeping
2	Ploughing	Transplanting
3	Clearing of paddy dykes	Weeding
4	Uproot seedlings	Uproot of seedlings
5	Harvesting and sunning paddy	Harvesting and sunning paddy
6	Broadcasting of compost	Weeding
7	Gather sand	Gather sand
8	Catch small fish, frogs and paddy field rats	Sell small fish, frogs and paddy field rats
9	Weave on the loom	Weave on the loom, pottery
10	Axe logs for firewood, gather firewood	Gather firewood, gather wild plants
11	Migrant worker	Migrant worker
12	Odd job	Odd job, Vendoring

*Source: Field survey

Off-farm Activities as a Component of the Livelihood

Off-farm activities have become an important component of livelihood strategies among rural households. People without ownership of farmland take up farm work for wages

and available job for a daily wage when farm work recesses. Such incomes cannot make for a family's subsistence for various reasons so off-farm income has to be tried now and then. A family cannot stand on a single livelihood alone so seasonal off-farm activities have to be taken up for a constant income. Farming becomes less profitable and more risky as a result of crop and market failures, farm debts, income fluctuations, climatic change, policy, shock and health, and they are pushed into off-farm activities leading distress-push diversification.

The upper class, being engaged in two kinds of livelihood, can well deal with family's living and matters of health, education, and social affairs; while the middle class has to engage in three kinds of livelihood to carry on likewise. But the lower class has to take up three kinds of livelihood just for family's subsistence. Households are rather pulled into off-farm activities leading risk reduction, daily income in the following Table 2.

Table (2) Types of Subsistence Patterns

No	Village	Social class	First income	Second income	Third income
1	Chiba (North)	Upper class	Paddy farm, Power loom, Rice mill	Trade	
		Middle class	Paddy farm, Hand loom	Shop	Odd Job
		Lower class	Paddy farm, Odd Job	Peddling, Pottery, Fishery, Odd Job	Odd Job
2	Chiba (South)	Upper class	Paddy farm, Power loom, Rice mill	Trade	
		Middle class	Paddy farm, Hand loom,	Shop	Odd Job
		Lower class	Paddy farm, Odd Job	Fishery Odd Job	Odd Job

According to the Table 2, households need to diversify their income sources in order to strengthen their resilience, particularly during adverse seasonal, economic or social conditions. To whatever extent possible, they engage in different livelihood systems at the same time. Chiba (North) and Chiba (South)villages by social mapping have three social classes in which middle class numbers most, upper class least, and lower class is in the middle range. Moreover, subsistence pattern varies in accord with the social class concerned.

Discussion

The existence of, and degree of access to, livelihood assets is therefore important in influencing the livelihood options that people may or may not have. Chamber & Cornway (1991) demonstrated the five broad asset areas are human, natural, financial, physical and social assets. Natural capital refers essentially to the resources found in the natural environment.

Timmermans (2004) demonstrated that in South Africa, because of the inaccessibility to considerable natural resources and environmental constraints they do not become natural capital enough for livelihood. Therefore most of the poorest are depending on migrant remittances and state welfare grants for their survival. On the contrary, in the current study area, being dependence on agriculture for their livelihoods, mainly use land, climate, water, soil, flora and fauna out of the natural resources. Dependent on accessibility to natural resources livelihood patterns and livelihood strategies branch out differently. Year on year families of upper and middle classes take up for livelihood rice farming and gardening as they already have such cultivable plots of land. For gradual yearly degradation of fertile top

soil more chemical fertilizers are needed, and rice farmers have to bear more costs. The families in the lower class access such natural resources as edible wild plants, fish, eels, paddy-field mouse and fuel wood for their own use and livelihood. For water resource all social classes have access to Mu Canal. The rain fall is not enough for agriculture so they have to mainly depend on irrigated water for that purpose. Families in the upper and middle classes irrigate Mu Canal water for their paddy fields gardens. The upper and middle classes use water from the sources for drinking, cooking and domestic use from hand-pumped well. When Mu Canal is without water those families commercially collect sand out of it for extra income. Meanwhile the families of lower class labor for farmland owners for daily wage, and use the remaining Mu Canal water for domestic use. The soil having been used continually for years has become degraded that soil needs to be remedied. Some members of the lower class catch fish and set traps for eels and paddy-field mouse for their livelihood. Consequences of use of chemical fertilizer and electric shock to fish have become fish species are depleting year by year.

The above facts show that natural resources play a vital role for all social classes. The upper and middle classes have access to land for residential site and growing crops, while this opportunity does not exist for the lower class. Therefore in regard of natural resources, the social classes based on their socio-economic position are found different livelihood patterns and livelihood strategies.

Conclusion

The **livelihood** of local people of Chiba (North) and Chiba (South) villages is agriculture based. Growing paddy does not make for year-round income and all members of social classes have alternative livelihoods on-farm and off-farm activities. In so doing, the upper and middle classes choose, based on affordability of financial investment, rice milling, mechanical or hand weaving on the loom, horticulture, paddy marketing, collecting and selling of sand, shop keeping, or commerce. In rice-farming recess, the lower class goes for fishing, setting traps for eels, mouse trapping, and vending, weaving on the loom, gathering of water convolvulus in the wild, gathering of firewood, pottery, taking any available job, or working as migrant elsewhere.

Members of the upper and middle classes, making use of farmland as a **natural resource**, do double cropping of paddy-monsoon and summer through irrigation. Most farmers of the upper and middle classes use Mu Canal water for agriculture whereas members of the lower class serve as carriers of sand for a daily wage. Therefore people of all social classes are found to be earning their livelihood, being connected directly or indirectly with natural resources.

Recommendations

To have sustainable livelihood, all social classes should be made conscious of need to lessen the loss of natural resources, and community wise maintenance of those resources should be undertaken.