MINISTRY OF AGRICULTURE AND IRRIGATION
MINISTRY OF LIVESTOCK AND FISHERIES
MINISTRY OF COOPERATIVES

THE DEVELOPMENT STUDY ON SUSTAINABLE AGRICULTURAL AND RURAL DEVELOPMENT FOR POVERTY REDUCTION PROGRAMME IN THE CENTRAL DRY ZONE OF THE UNION OF MYANMAR

POVERTY PROFILE

AUGUST 2010

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
SANYU CONSULTANTS INC., TOKYO, JAPAN

FOREWORD

This Poverty Profile is a part of outputs from the Development Study on Sustainable Agricultural and Rural Development for Poverty Reduction Programme in the Central Dry Zone (CDZ) of the Union of Myanmar. The Study was commenced in May 2006 and carried out for a period of over 4 years in partnership with all those concerned officers of the Ministry of Agriculture and Irrigation, Ministry of Livestock and Fisheries, and Ministry of Cooperatives.

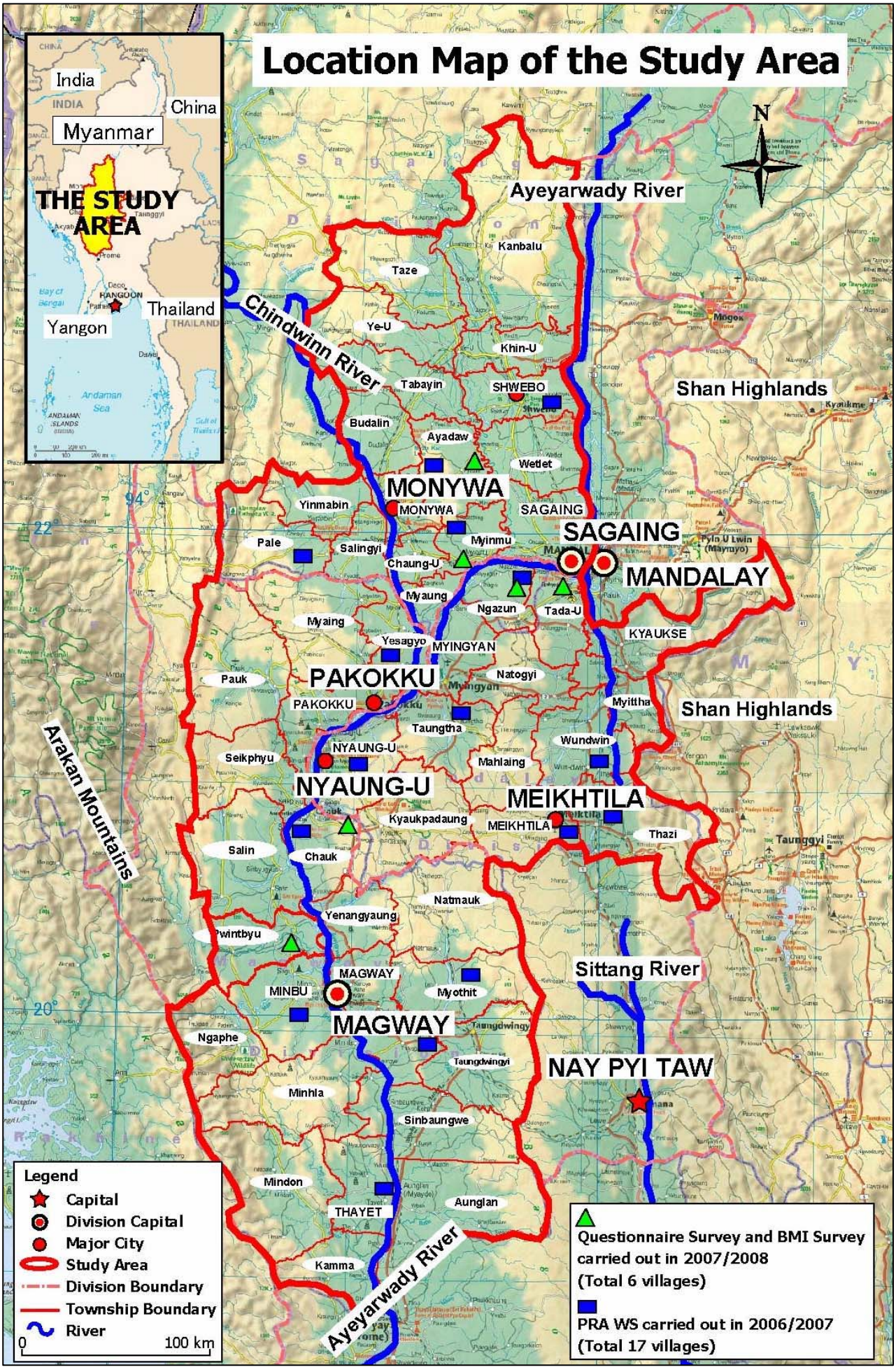
The CDZ extends within 3 divisions - Mandalay, Sagaing and Magway, covering an extensive area of 75,169 km^2. The population of the CDZ is estimated at 9,842,000 as of 2003 according to the population data recorded at relevant offices at township, giving a population density of 131 persons/km^2. The CDZ hereby has larger share of population rather than share of land area against whole Union exampled as that of the whole Union is only 79 persons/km^2. One of the reasons of relatively high population density may lie in the favorable living environment of the CDZ with larger portion of flat alluvial zone as compared to western, northern and eastern areas that accompany with mountainous areas.

The overall relief of the CDZ can be classified into river basins with fertile diluvial soils and fluvial deposit derived soils, alluvial plain extending along rivers in the CDZ, and then plateau zone with infertile soils over Bago Hills situated in between Ayeyarwady River and Sittang River. From land area point of view, plain occupies by far large portion, and an intensive farming is practiced making use of fertile soils along the grand Ayeyarwady River. As the topography shifts away from the rivers to the plain and then to the plateau, agricultural activities tend to become extensive.

From these facts, even though it is called Central “Dry” Zone, the CDZ should be interpreted as a drier area in its comparison with other areas in the Union where monsoon type climate predominates. Of course, at the very end of lingering dry season during November - next May, soils are dried up and wind erosion severely takes place. During this period, typical scenery in so-called semi-arid zone appears in the CDZ as well, but in contrast, in the rainy season falling in the period of June - October, paddy cropping, typical activity under monsoon climate, has long been practiced since prehistoric era in climatically favorable areas within the CDZ.

With above background, the Study carried out a series of surveys and interviews as well as literature reviews, which all tried to portray the life of the CDZ population in different aspects including poverty line establishment, identification of typical success and pitfall stories for the rural population, BMI (Body Mass Index) measurement, comparison of development indexes between the CDZ and the whole nation as well as between the Union and other countries, e.g. ASEAN countries. The main part of these activities centers on the establishment of poverty lines and also estimation of poverty ratios based on household baseline survey which covered 482 samples in six villages.

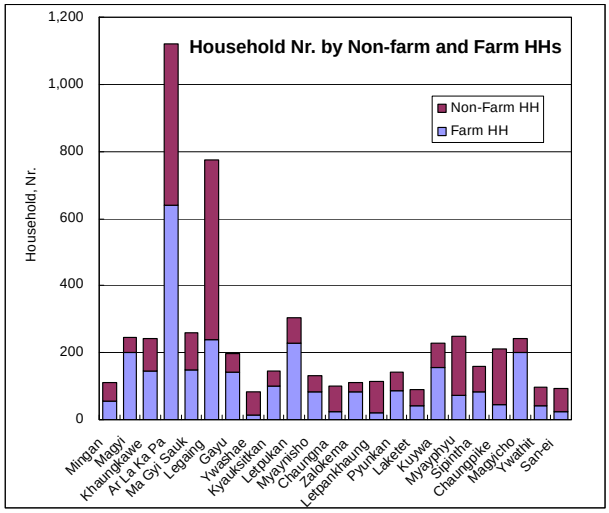
Special acknowledgement goes to the officers of Department of Agricultural Planning (DAP) and Myanma Agriculture Service (MAS) both at the Headquarters as well as at field level for the leading role of facilitating related field surveys as well as for their supports in collecting data and information included in this Report. It is our sincere hope that this Poverty Profile Report will serve as a reference point and guide to those who wish to improve the life of the CDZ population.

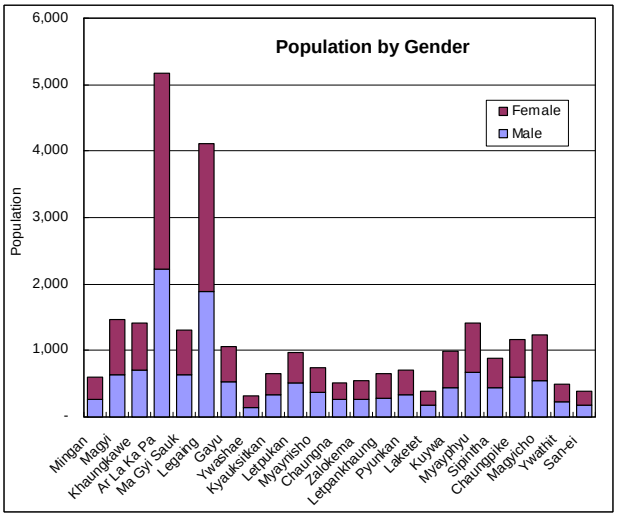

Location Map of the Study Area
India
China
Myanmar
THE STUDY AREA
Thailand
Yangon
Ayeyarwady River
Chindwinn River
Shan Highlands
MONYWA
SAGAING
MANDALAY
PAKOKKU
NYAUNG-U
MEIKHTILA
MAGWAY
NAY PYI TAW
Arakan Mountains
Sittang River
Ayeyarwady River
Kanbalu
Taze
Ye-U
Khin-U
Tabayin
SHWEBO
Budalin
Ayadaw
Wetlet
Yinmabin
Pale
Salingyi
Chaung-U
Myinmu
Myaung
Ngazun
Tada-U
Myaing
Yesagyo
MYINGYAN
KYAUKSE
Pauk
Natogyi
Myittha
Taungtha
Wundwin
Seikphyu
Mahlaing
Kyaukpadaung
Thazi
Salin
Chauk
Natmauk
Yenangyaung
Pwintbyu
MINBU
Myothit
Ngaphe
Taungdwingyi
Minhla
Sinbaungwe
Mindon
THAYET
Aunglan
Kamma
Legend
Capital
Division Capital
Major City
Study Area
Division Boundary
Township Boundary
River
0
100 km
Questionnaire Survey and BMI Survey carried out in 2007/2008 (Total 6 villages)
PRA WS carried out in 2006/2007 (Total 17 villages)

Summary of the 17 PRA Villages (2006) and 6 Target Pilot Project Villages (2007/08)

	Villages (Division/TS)	Household			Population			Family Size
		Total	Farm HH	Non-Farm HH	Total	Male	Female	
6 Pilot Project Villages	Mingan (Magway/Chauk)	110	54 (49%)	56 (51%)	604	272 (45%)	332 (55%)	5.49
	Magyi (Sagaing/Ngazun)	245	200 (82%)	45 (18%)	1,460	642 (44%)	818 (56%)	5.96
	Khaungkawe (Mandalay/Tada-U)	242	144 (60%)	98 (40%)	1,410	705 (50%)	705 (50%)	5.83
	Ar La Ka Pa (Sagaing/Myinmu)	1,121	640 (57%)	481 (43%)	5,179	2227 (43%)	2952 (57%)	4.62
	Ma Gyi Sauk (Sagaing/Ayadaw)	260	150 (58%)	110 (42%)	1,300	637 (49%)	663 (51%)	5.00
	Legaing (Magway/Pwintbyu)	776	239 (31%)	537 (69%)	4,119	1895 (46%)	2224 (54%)	5.31
	Average	459	238 (52%)	221 (48%)	2,345	1,063 (45%)	1,282 (55%)	5.11
17 PRA WS Villages	Gayu (Sagaing/Myinmu)	196	141 (72%)	55 (28%)	1,063	536 (50%)	527 (50%)	5.42
	Ywashae (Sagaing/Ayadaw)	82	15 (18%)	67 (82%)	319	149 (47%)	170 (53%)	3.89
	Kyauksitkan (Sagaing/Chaung-U)	144	100 (69%)	44 (31%)	651	331 (51%)	320 (49%)	4.52
	Letpukan (Sagaing/Pale)	303	229 (76%)	74 (24%)	967	503 (52%)	464 (48%)	3.19
	Myaynisho (Sagaing/Khin-U)	132	83 (63%)	49 (37%)	735	368 (50%)	367 (50%)	5.57
	Chaungna (Mandalay/Taungtha)	101	23 (23%)	78 (77%)	517	256 (50%)	261 (50%)	5.12
	Zalokema (Mandalay/Ngazun)	112	82 (73%)	30 (27%)	553	265 (48%)	288 (52%)	4.94
	Letpankhaung (Mandalay/Meikhtila)	115	21 (18%)	94 (82%)	646	280 (43%)	366 (57%)	5.62
	Pyunkan (Manalday/Thazi)	142	87 (61%)	55 (39%)	713	341 (48%)	372 (52%)	5.02
	Laketet (Mandalay/Wundwin)	89	43 (48%)	46 (52%)	387	172 (44%)	215 (56%)	4.35
	Kuywa (Mandalay/Nyaung-U)	227	157 (69%)	70 (31%)	981	449 (46%)	532 (54%)	4.32
	Myayphyu (Magway/Yesagyo)	250	71 (28%)	179 (72%)	1,418	664 (47%)	754 (53%)	5.67
	Sipintha (Magway/Magway)	158	83 (53%)	75 (47%)	876	443 (51%)	433 (49%)	5.54
	Chaungpike (Magway/Chauk)	210	45 (21%)	165 (79%)	1,161	594 (51%)	567 (49%)	5.53
	Magyicho (Magway/Chauk)	241	202 (84%)	39 (16%)	1,232	551 (45%)	681 (55%)	5.11
	Ywathit (Magway/Pwintbyu)	98	40 (41%)	58 (59%)	501	221 (44%)	280 (56%)	5.11
	San-ei (Magway/San-ei)	92	23 (25%)	69 (75%)	397	180 (45%)	217 (55%)	4.32
	Average	158	85 (54%)	73 (46%)	772	371 (48%)	401 (52%)	4.87
Gross Average		237	125 (53%)	112 (47%)	1,165	544 (47%)	621 (53%)	4.99

Note: Data from relevant village PDCs in 2006 for the 17 PRA villages and in 2007/2008 for the pilot project villages.





EXECUTIVE SUMMARY

1. This Study employs Cost of Basic Needs method to establish the Poverty Line based on a baseline survey carried out in 6 villages. By using the prevailing food costs in August 2007, when the household baseline survey was carried out, the Food Poverty Line estimated is 163,903 Kyats (US$ 130) per adult equivalent per year. Non-food expenditures are 67,147 Kyats (US$ 53) and 98,044 Kyats (US$ 78) for a typical non-farm household member and a typical farm household member per year respectively.

2. Therefore, the Poverty Lines are 231,050 Kyats (US$ 183) per adult equivalent per annum for non-farm household and 261,947 Kyats (US$ 208) per adult equivalent per annum for farm household. The shares of the food poverty line out of the poverty line are 71 % and 63 % for non-farm household and farm household respectively. The poverty lines per household per annum are, taking into account the number of typical household members, worked out at about 1.1 million Kyats (US$ 858) and about 1.2 million Kyats (US$ 973) for non-farm household and farm household respectively.

3. Poverty ratio by all the sampled households is 43%, and the ratio for farm household only is 33% whereas the one for non-farm household is 55%. This clearly shows poverty for non-farm household is deeper than that of farm-household. Further, the poverty ratio for farm casual labor is as high as 75%. This result clearly shows where the poorest people are; that is in the category of farm casual labors. Poverty ratio by gender shows deference as expected; namely, the ratio for male-headed household is 43% while the one for female-headed household is 49%.

4. Poverty gap ratio indicates the depth of the poverty; corresponding to the distance between the poverty line and the average of expenditures for those who fall below the poverty line. The poverty gap ratios are; 11%, 8%, 14%, and 20% for whole sampled households, farm household, non-farm household, and farm casual labor household. It is indicated that the depth of the poverty for non-farm household is deeper than that of farm household, and again that of farm casual labor household is further deeper than that of non-farm household. The poverty for farm casual labor household is more than 2 times deeper than that of farm household (20% vs. 8%).

5. To measure the inequality among village members, Gini index was calculated in 6 villages where the baseline survey was carried out. Gini Index ranges from 0.197 for Mingan village to 0.411 for the Legaing Village with an average of 0.387. Mingan village's Gini index is the lowest, 0.197, and also the average income per year per household is 817,317 Kyats which is also the lowest amongst the 6 villages. Here in this village, we may say people are poor and equally poor. In Legaing where the Gini index is over 0.4, the farmer household annual average income is over 2 million Kyats while the average income for farm casual labor households is only about 750,000 Kyats. We may say the difference between rich and poor in Legaing village is considered somewhat already serious.

6. In the CDZ, rural population can be primarily categorized as farm household and non-farm (landless) household. Non-farm households consist of 42 % of the total rural households in the CDZ. Landless households are poorer than the farm households, and the poorest of the poor can be found in farm casual labors. Due to the nature of the seasonality in farming activities, farm casual labors are not dependent totally on farm laboring but are trying to engage in any kind of income activities. Assuming that farm casual labors earn the top share of income from farm labor wage, they are estimated at about 20 to 30 % of the total rural households.

7. Several reasons may be suggested to answer why as much as 43% of the CDZ population are below the poverty line. At first it may be the unstable climatic condition in the CDZ. In fact, distinctive character of any dry zones is its unstable rainfall pattern. Rainfall is actually not much falling, and moreover the pattern varies very widely by year, by month and by place. Except for irrigated lands, their farming depends totally upon the unstable rainfall, on which no one can expect consecutive normal level of harvests over 3 years. Under such condition, investment such as chemical fertilizer entails increasing of risk other than increasing of harvest, hindering consecutive growth, say, in keeping with population growth.

8. Interviews to rural people can suggest us what has driven them into poverty as; parceling of farmland getting smaller for inheritance, illness and treatment cost, wife's fecundity, multiple debts, wedding ceremony spending much money, apportion of properties, welcome for visitors again spending much money, farm management without knowledge and experiences, respecting monk, drinking in habit, price escalation, purity never suspicion, labor shortage for farm works, insufficient farming successors, education fee, pride in past riches, and precept against killing creatures, donation ceremony, donation of pagoda, compulsory paddy delivery quota prevalent before 1988, cropping order by the authority, farming guidance by extension authority, etc., amongst which the last 6 are particular to Myanmar.

9. There may be 2 areas to support the poor; by institutional means and by projects. As per the former, almost no institutional system of distributing income from the rich to the poor does exist, e.g. progressive income tax system and land taxation system depending upon the productiveness. As a matter of fact, there is a land taxation system put in place in Myanmar, which is legally a charge of tilling the farmland since ownership belongs to the state. However the rate is not consequential as it is only 5 Kyats/ac for good farmlands and as little as 1 Kyats/ac for infertile farmlands. In any case, one may agree to say that there comes already a time of introducing institutional measures, e.g. distribution of welfare through progressive taxation system, reform of land taxation system, and also of creating job opportunities which can absorb landless people.

10. Apart from above institutional measures, some projects targeting landless people should be put in place. Through the experiences from pilot projects, we recommend for the landless people such projects as mushroom cultivation which can be practiced in house yard, goat revolving, pig revolving, promotion of vegetable cultivation which can create a lot of farm casual labor works, and cottage activities for example weaving, knitting, embroidery, etc. Expected annual income by both husband and wife working as farm casual labor would only be about 648,000 Kyats, which accounts for only about 60% of the poverty line. Therefore this simple calculation leads us to believe that there should be other means than or supplementary means to farm casual labor works to get them out of the poverty.

11. Farmer household, on the other hand, may be living in better condition as compared to landless people. However salient features in natural condition of the CDZ do not allow the farm household to do same practices as what is done in other stable environmental condition. Along Ayeyarwady river, there are lots of Le (lowland) which enable paddy cultivation where the farmers can enjoy good harvest as expected. On the other hand, agriculture practiced in Ya (upland), especially along Bago Hills side, is affected by its unstable rainfall. Under the former condition, straight-forward growth could be achieved corresponding to how much s/he has invested if one desires so. Under the latter condition, however, the most important norm in thinking development should be to build risk-hedge in their livelihood.

CONTENTS

ACRONYMS AND ABBREVIATIONS

AED	Agricultural Extension Division
AMD	Agriculture Mechanization Department
AMDA	Association of Medical Doctors of Asia
ARCPCA	Applied Research Center for Perennial Crops
BMI	Body Mass Index
CARI	Central Agriculture Research Institute
CARTC	Central Agriculture Research and Training Centre
CBM	Central Bank of Myanmar
CBO	Community Based Organization
CD	Cooperative Department
CID	Cottage Industry Department
CRDI	Credit for Rural Development Institution
CSD	Cotton and Sericulture Department
CSO	Central Statistical Organization
DAP	Department of Agricultural Planning
DAR	Department of Agriculture Research
DOF	Department of Fisheries
DZMO	Dry Zone Micro-finance Organization
FAO	Food and Agriculture Organization
FMD	Foot and Mouth Disease
GDP	Gross Domestic Product
GOJ	Government of Japan
GOM	Government of Myanmar
GRDP	Gross Regional Domestic Product
HDI	Human Development Index
ICDP	Integrated Community Development Project
ICM	Integrated Crop Management
ICRISAT	International Crops Research Institute for Semi-Arid Tropics
ID	Irrigation Department
IMO	Indigenous Micro Organism (In Myanmar, it is called dochakukin as in Japanese)
IRRI	International Rice Research Institute
JFAD	Jute and Fiber Allied Division
JICA	Japan International Cooperation Agency
LBVD	Livestock Breeding and Veterinary Department
LFDB	Livestock and Fisheries Development Bank
LUD	Land Use Division
MADB	Myanma Agricultural Development Bank
MAPT	Myanma Agricultural Produce Trading
MAS	Myanma Agriculture Service
MC	Ministry of Cooperatives
MCSE	Myanma Cotton and Sericulture Enterprise
MDG	Millennium Development Goal
MEIS	Myanmar Export and Import Service
MFI	Micro Finance Institution

MFR	Ministry of Finance and Revenue
MFTB	Myanma Foreign Trade Bank
MICB	Myanma Investment and Commercial Bank
MICDE	Myanmar Industrials Crops Development Enterprise
MJI	Myanma Jute Industries
MOLF	Ministry of Livestock and Fisheries
MLFDB	Myanma Livestock and Fisheries Development Bank
MOAI	Ministry of Agriculture and Irrigation
MOF	Ministry of Forestry
MRTLC	Myanma Rice Trading Leading Committee
MRTSC	Myanma Rice Trading Sub-Committee
NCD	Newcastle Disease
NGO	Non-Government Organization
NPD	National Project Director (the Chief Counterpart to the JICA Study)
NPK	Nitrogen, Phosphate, Potassium
ODA	Official Development Assistance
OISCA	Organization for Industrial, Spiritual and Cultural Advancement-International
PCFD	Perennial Crops and Farm Division
PDC	Peace and Development Council
PPD	Plant Protection Division
PPP	Purchasing Power Parity
PRA	Participatory Rural Appraisal
SAMB	State Agricultural Marketing Board
SD	Seed Division (under MAS)
SD	Sugarcane Department (under MICDE)
SLRD	Settlement and Land Records Department
SPDC	State Peace and Development Council
TS	Township (the smallest administrative unit where government institutions are placed)
UMMB	Urea Molasses and Mineral Block
UNDP	United Nations Development Programme
VICO	Village Credit Organization
WFP	World Food Programme
WRUD	Water Resources Utilization Department
YAU	Yezin Agriculture University

FARMLAND TERMS IN MYANMAR

Le	Paddy land or wet land which can be used as paddy land
Yar	Upland
Kaing	Farmlands which appear in the flood lands in Ayeyarwady River as the water recedes
Kyun	Farmlands which appear on the alluvial sandbars in Ayeyarwady River as the water recedes

UNIT CONVERSION

1 basket	Paddy	20.9 kg
1 basket	Wheat	32.7 kg

1 basket	Maize (seed)	24.9 kg
1 basket	Sorghum	28.1 kg
1 basket	Sesame	24.5 kg
1 basket	Mustard	26.1 kg
1 basket	Sunflower	14.5 kg
1 basket	Groundnut	11.4 kg
1 basket	Butter Bean	31.3 kg
1 basket	Sultani	31.3 kg
1 basket	Sultapya	31.3 kg
1 basket	Chickpea	31.3 kg
1 basket	Pebyugalay	31.3 kg
1 basket	Pegyi	31.3 kg
1 basket	Pegyar	31.3 kg
1 basket	Pigeon Pea	32.7 kg
1 basket	Black Gram	32.7 kg
1 basket	Green Gram	32.7 kg
1 basket	Bocate	32.7 kg
1 basket	Soybean	32.7 kg
1 basket	Cowpea	32.7 kg
1 basket	Peyin	32.7 kg
1 basket	Sadawpea	32.7 kg
1 basket	Payazar	32.7 kg
1 basket	Pe-nauk	32.7 kg
1 basket	Other Pulses	31.7 kg

1 pyi	8 nohzibu
1 basket	16 pyi
1 viss	1.64 kg
1 lb (pound)	0.45 kg

1 inch (in.)	2.54 cm
1 feet (ft.)	30.5 cm
1 acre (ac)	0.405 ha
1 hectare (ha)	2.47 ac
1 ac-ft	1233.4 cum

CURRENCY EQUIVALENTS (AS AT JUNE 2010)

1 US$	=	450.99 Myanmar Kyats (TTB)
1 US$	=	91.10 Japanese Yen (TTB)
1 Kyat	=	0.202 yen
1 US$	=	980 Myanmar Kyats (Market Rate)
1 lakh	=	100,000 Kyats

MYANMAR FINANCIAL YEAR

April 1 to March 31

LIST OF TABLES:

LIST OF FIGURES:

CHAPTER 1 SCOPE AND METHODOLOGY OF THE STUDY

Poverty profiling has been carried out under 'The Development Study on Sustainable Agricultural and Rural Development for Poverty Reduction Programme in the Central Dry Zone (CDZ) of the Union of Myanmar'. This Report describes the scope of the poverty profiling and also the methodologies, following which CDZ poverty is discussed in different aspects including poverty line establishment; success and pitfall stories for the rural people are presented based upon face-to-face interviews; CDZ poverty and development are compared with other parts of Myanmar; and poverty and development of Myanmar are illustrated in comparison with other ASEAN countries. This Chapter 1 deals with the first part of those issues:

1.1 Scope of the Study

The objectives of the Development Study are: 1) to formulate Action Plans with practically applicable measures to the CDZ for reducing poverty, focusing on the livelihood of those who live in the area, and 2) to develop capacity of formulating plans and implementing projects for counterparts, extension workers, farmers and targeted communities in the target area. As indicated in the first objective, the overall objective of implementing this Study is to reduce the poverty in the Central Dry Zone. To reduce the poverty, what we need as the first step is to identify the situation of the poverty facing the population. The scope of establishing the Poverty Profile is therefore summarized as follows:

1) To collect and analyze available data and information and conduct field surveys including interviews with relevant authorities as well as with local communities in relation to poverty prevalent in the Central Dry Zone,
2) To identify people's perception about wealth and poverty through focus group discussions and PRA workshops,
3) To establish a Poverty Line in economic term together with the percentage of the population who fall below the poverty line, and further to identify who the poor people are,
4) To present the status of the rural population in relation to the Poverty Line from different angles such as property possession, educational level achieved, food consumption, malnutrition status, debt regularity and its amount, etc.,
5) To identify success stories and pitfall stories based upon field interviews, from which one may know how local people got out of poverty and vice-versa, suggesting a deductive way applicable to other rural colleagues for the successes and also for avoiding from getting into pitfalls,
6) To discuss the status of the poverty of Central Zone Area in a broader spectrum by comparing the status of whole Myanmar, and in same way to discuss the poverty status of the Myanmar in comparison with those of ASEAN countries, and
7) To prepare conclusion which can give policy implications of how we can reduce the poverty in the Central Dry Zone.

1.2 Methodology of the Poverty Identification

Methodologies employed in establishing the Poverty Profile are; data and information collection, face-to-face interviews, focus group discussions at village level, PRA workshops at village level, questionnaire surveys, measuring of BMI (body mass index consisting of height and weight), etc. Of those, major ones are elaborated below:

1) Data and information collection: Data and information have been collected from relevant offices such as Central Statistical Office, TS PDC offices, divisional and headquarters offices of education, health, MAS, etc. Collected data and information are; population, land use, soils, agricultural

production, sown areas, agriculture yields, agro-processing plants, water resources including pumping stations, school enrollment, school dropout ratio, literacy ratio, infant and under-5 mortalities, maternal mortality rate, top-3 diseases prevalent, etc.

2) Face-to-face interview: An open-ended questionnaire form was employed in this face-to-face interview. The interviews have been conducted in different situations; namely, to understand the perspective on the rural population's livelihood, to identify their success stories and pitfall stories, etc.

3) Focus group discussions: Focus groups are composed of village leaders such as VT chairman, 100 HHs leaders and 10 HHs leaders[1], group leaders and committee members formed under the pilot project implemented as a part of the Study, particular social stratum such as landless people, etc. The focus group discussions have been done in 17 PRA villages[2] carried out in 2006 and also in the 6 pilot project villages[3] carried out in 2007. The location of the 17 PRA villages and the 6 pilot project villages are shown in the following Figure 1.2.1 and Figure 1.2.2.

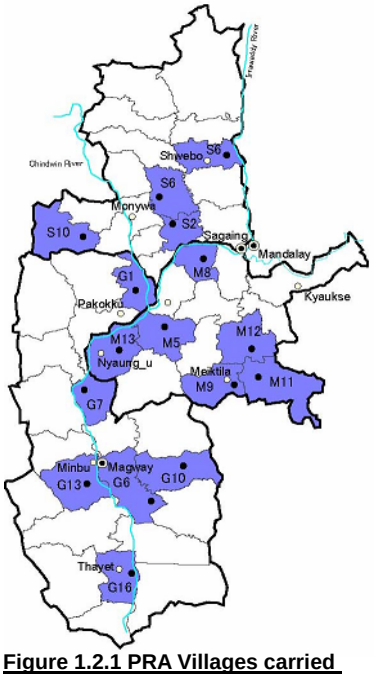


Figure 1.2.1 PRA Villages carried out in 2006

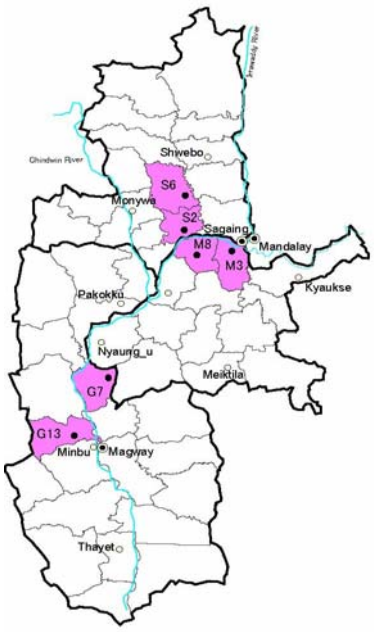


Figure 1.2.2 Pilot Project Villages carried out in 2007

4) PRA workshops: PRA workshops had been carried out in 2006. The objectives of the PRA workshops are 1) to identify their perception about wealth and poverty and also the composition of those stratum in relevant villages, 2) to identify local resources, 3) to assess the accessibility of social infrastructure, 4) to identify availability of relationship with government services, etc. The PRA workshops were carried out in the 17 villages.

5) Questionnaire survey: Questionnaire survey was carried out 2 times in year 2007 in the 6 pilot villages. The first questionnaire survey was administered from July to August 2007 mainly to the beneficiaries for the pilot projects carried out in 2007/08. The first questionnaire survey covered

[1] In Myanmar, there is a leader covering 10 households who is called 10 HHs leader, and likewise, there is a leader covering 100 HHs who is called 100 HHs leader. They are elected by concerned villagers and not nominated by authority. 100 HHs leader cannot be 10 HHs leader, and thereby they are separate individual. It was introduced after 1974 when the referendum was conducted for the original constitution.

[2] First 14 villages were given by the MAS, and another 3 villages were added by the JICA Study Team taking into consideration the geographical location.

[3] 6 pilot villages were selected taking into consideration their typology by township and also geographical location; namely, 2 villages each from the 3 divisions. For the typology of the Study Area, see the Chapter 4 of the Main Report.

189 samples divided in the 6 pilot villages. The second questionnaire survey was carried out from October to December 2007 to basically non-beneficiaries of the pilot projects. The second questionnaire covered 230 households. Questions asked are; household structure, education level by household members, income and expenditure, properties, debt and lender, diet, etc. Those interviewed are summarized in the following tables by village.

Table 1.2.1 Summary of Questionnaire Samples Interviewed, carried out in 2007

Village	1st Survey		2nd Survey		Total		
	Farmer	Non-farmer	Farmer	Non-farmer	Farmer	Non-farmer	Total
Khaungkawe (M3)	9	17	20	2	29	19	48
Magyi (M8)	21	9	20	0	41	9	50
Ar La Ka Pa (S2)	26	29	50	34	76	63	139
Ma Gyi Sauk (S6)	11	19	20	3	31	22	53
Mingan (G7)	6	8	5	3	11	11	22
Legaing (G13)	15	19	25	48	40	67	107
Total	88	101	140	90	228	191	419

Note: Indexes in brackets such as M3, M8, S2 are corresponding to the location of the villages shown in Figure 1.2.2.

Table 1.2.2 Percentage covered by the Questionnaire Survey

Village	Household in the Village		Surveyed HHs		% covered		
	Farmer	Non-farmer	Farmer	Non-farmer	Farmer	Non-farmer	Total
Khaungkawe (M3)	144	98	29	19	20	19	20
Magyi (M8)	200	45	41	9	21	20	20
Ar La Ka Pa (S2)	640	481	76	63	12	13	12
Ma Gyi Sauk (S6)	150	110	31	22	21	20	20
Mingan (G7)	54	56	11	11	20	20	20
Legaing (G13)	239	537	40	67	17	12	14
Total	1,427	1,327	228	191	16	14	15

Note: Numbers of HHs by farmer and non-farmer are as at 2007, given by Village Tract chairmen.

6) BMI (Body Mass Index) measurement: Body mass index is an indicator of thinness or fatness of human body and is defined as weight divided by the square of height (Kg/m2). For many years, BMI, also called the Quetelet's index, has been used in developed counties for assessing obesity and its associated risks of chronic diseases which are common in the affluent societies. Recently, however, interest has expanded in using BMI for assessing the chronic dietary deficiency and morbidity patterns at the lower end of the range of the BMI scale. Ferro-Luzzi & Waterlow (1988) for example suggested a cut-off of 18.5 BMI to determine the presence of chronic energy deficiency at the rural population level. A set of height scale and weight scale was provided to each 100 HHs leader in the 6 pilot villages, and the height and the weight have been sampled as below, covering about 60% of the population:

Table 1.2.3 Summary of BMI Samples Measured

Category	Adult (>=20yrs)		Boy/girl (6 – 20yrs)		Infant (<6 yrs)		Total	
Sex	Male	Female	Male	Female	Male	Female	Male	Female
Mingan	123	163	51	56	16	18	190	237
Magyi	159	263	43	53	19	12	221	328
Khaungkawe	198	228	79	79	34	35	311	342
Ar La Ka Pa	1,222	1,598	449	453	91	103	1,762	2,154
Ma Gyi Sauk	117	249	37	50	9	14	163	313
Legaing	707	876	314	309	76	97	1,097	1,282
Total	2,526	3,377	973	1,000	245	279	3,744	4,656

Source: JICA Study Team from BMI measurements in 2007 and 2008

CHAPTER 2 CDZ POVERTY IN DIFFERENT ASPECTS AND AREAS TO FOCUS

Chapter 2 discusses the definition of poverty, and then establishes the poverty line in economic term. Following the establishment of the poverty line, characteristics for the poor people are also discussed from different aspects such as property possessing, food consumption, debt ratio by social stratum, nutrition status substituted by Body Mass Index (BMI), and education status. People's perception about wealth and poverty is then presented with reference to the results from PRA workshops done in 2006/07. At the end of this chapter, discussion is made about landless people who in most cases fall in the poorest social stratum of the poor.

2.1 Definition of the Poverty

In this sub-chapter definition of poverty employed in Myanmar and concept of poverty proposed by JICA and international organizations are articulated. Thereafter, based upon the results of the Study, profile of poverty as major issue in the Study Area is illustrated and thereby direction of development intervention to the CDZ can be foreseen.

2.1.1 Definition of Poverty in Myanmar: Poverty in Economic Term

Central Statistics Organization (CSO) carried out Households Income and Expenditure Surveys (HIES) in 1997 and 2001. Referring to the results of these surveys, CSO publicized the rate of poverty estimated on the basis of subsistence cost, namely the minimum cost to secure nutritional requirement defined by the Ministry of Health. This concept (though it is not explicitly described in HIES) could be referred to as overall poverty (in economic term) if it is interpreted including nutritional and other prerequisite necessary for daily life[1].

In the above publication, CSO has not specified any "minimal cost" required for getting along minimum level of life including nutritional requirement, or economic poverty line. At any rate, however, as far as the government places base for the estimation of poverty rate on "the cost" of sustaining minimum life, it considers so-called "poverty in economic term" as major component of poverty.

2.1.2 Definition of Poverty in JICA: Poverty Reduction on Capability Approach

Differently, JICA defines poverty as follows: "poverty means a state in which people are deprived of any chance to develop capability to humanly sustain basic life and at the same time they are excluded from social arenas and development process". Further, poverty reduction doesn't merely aim at betterment of income, but it is termed as "Everyone can spend healthy and creative life without lack of clothing, eating and dwelling, can be a member of social community without being maltreated from the State or from the community to which she/he belongs and also are capable of sustaining freedom, dignity and self-respect".

In that definition of poverty reduction, an idea attached on Capability Approach introduced by A. Sen and M.C. Nussbaum can be found, that is poverty reduction or in another word development "towards better well-beings", "broadening choices of individual's way of life" or "expanding freedom of choosing one's life". In nowadays context, it may therefore be said that capability approach has presented basic concept of poverty reduction advocated by JICA and international organizations (of all others UNDP).

Capability approach attaches importance on the facilitation of environment and institutions as a core strategy of national public policy, thereby enabling individual actors to enlarge their liberal living.

[1] In contrast, exclusive cost meeting basic nutrition only is generally called "Food Poverty".

That is to say, current concept of poverty reduction is founded on an assertion that the individual can enlarge extent of freedom in individual way of life, in which expanding domain of 'being' and 'doing' of each and every individual is considered the most important where need arises for public policy.

In this connection, as to what capability means concretely, A. Sen declines from listing up, leaving it liberal selection of what capability means according to individual contexts. Differently, M.C. Nussbaum suggests fundamental 10 articles of capability from her view of giving suggestions of how development interventions should be by policymakers. Both of these supporters deem political freedom – a core function of democracy – as an imperative capability in the context of development, in other words poverty reduction, in their argument.

As seen in the present government development interventions, it is understood that the norm of directly controlling people's production related activities is still prevalent in government staff including those working in CP organizations, in a narrow context in agriculture sector it is still trying to directory control production, instead of facilitating of environment wherein the individual lives and the individual can make choice of ways of how to improve the production. Consequently, policies and their development interventions of this Country are different from its root of concept from the viewpoint of the context of poverty reduction that the capability approach stresses. The following argue poverty issues apart from the consideration of political environment:

2.1.3 Economic Difficulty as a Major Parameter of Poverty in the Central Dry Zone

In this Study, the most backward poverty in economic term is concluded as poverty, after referring to the definition of JICA and studying social dimensions, particularly focusing on the examination of 3 profiles of human development indices (HDI), namely economy, education and health that are convenient for availability of data and for comparison. In this regard, CP organizations of this Study consist of Ministry of Agriculture and Irrigation, Ministry of Livestock and Fisheries and Ministry of Cooperatives in charge of small-scale industrial promotion, and all of these line ministries are in charge of support for livelihood sector of the population, or the agencies directly related to the reduction of poverty in economic term.

It is interpreted that such social development sectors as education and health are important ones for the sake of poverty reduction, while these are found to be relatively favorable in the Study Area. Based on the concept of HDI, life expectancy as a barometer of health in 3 Divisions where the Study Area is located is averaged at 71 years old for female and 67 for male[2], implying not so short as compared to that of Myanmar mean or of ASEAN countries. In addition to the relatively better life expectancy, infant and under-5 mortality rates and also maternal mortality rate are lower as compared to those of other parts of Myanmar (for detail discussion, see Chapter 4). It can therefore be said that health status may not be so back-warding as in the economic situation to be mentioned later.

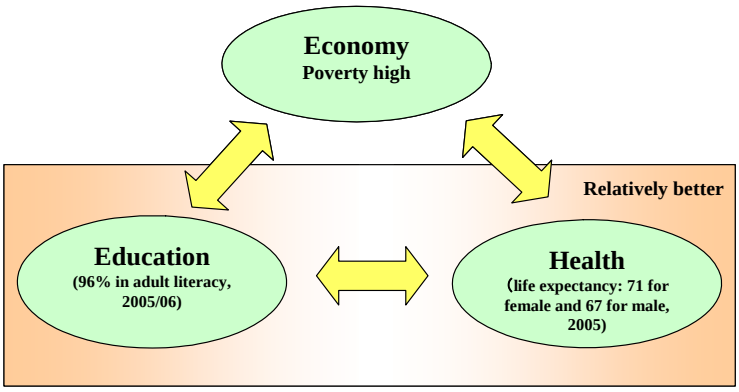


Figure 2.1.1 State and Link among 3 Cross-sections, namely, Economy, Education and Health

With regard to education, adult literacy, as an earmark indicator of education level, of the area

[2] The life expectancy in the Study Area was collected from TS PDC office.

indicates 96%, a considerably high level[3]. HDI educational indices include gross primary enrollment rate in addition to the adult literacy rate. However, data for estimating gross primary enrollment rate, indicating ratio of enrolled number of children versus number of children who reach schooling age at a specified period, was not available though data was available on how many people have graduated from primary school and how many have dropped out. According to an inquiry in villages of the Central Dry Zone, some children who fail to graduate primary schools no doubt exist. However, the rate estimated by the result of inquiry may be at maximum 20% or less, and even these non-graduated children can read and write owing to trainings in monasteries.

Meanwhile, from economic point of view, the results of PRA and interview survey have revealed that there are degraded people who are indebted as a result of failing to procure enough income to sustain livelihood, who cannot borrow money anymore because of outstanding debts, who cannot buy enough food to meet nutritional supply, who cannot help allowing their children being engaged in child labor (for an example, see box), who have lost landholders right that had been placed as collateral becoming a landless (precisely no landholders right) though the extent varies with villages or with individuals.

An example of child labor:

It is reported that within the 6 target villages of the Pilot Project carried out in year 2007/08, there are 2 villages which graduation rate of the primary school is not 100 percent. Recent rate of primary graduate in Khaungkawe Village stands at 75% only, and that in Mingan Village at around 90% only (reported by the village chairmen concerned).

Presence of available occupations, tinsmith cottage industry in Khaungkawe Village and sandstone ware production in Mingan Village which even children can be engaged, gives negative impact on the graduation rate, implying that children have to drop out from primary education because of poverty of their households in economic term.

Particularly observable in the case of landless farm laborers, many people live from hand to mouth due to their limited income amount, and seasonal fluctuation of income source availability is considerable. The result of individual interviews also shows that landless farm laborers hardly have the chance of eating meats other than the occasions of religious festival / events in the villages. Some of them even have rare chance to eat vegetables, and usually they live on poor menu consisting of rice, fish-paste and edible oil only.

That is to say, such poverty now arises in the CDZ because of lack of income, the basic means of life as failing to spend decent and healthy life with insufficient nutritional intake, or depriving children of education opportunities, one of fundamental human rights, as observed in Khaungkawe Village and Mingan Village. Further aggravated state of poverty seems to appear when one fails to refund his/her debt. Failing of settling his/her debt may degrade one's self-respect and may lead to possibility of losing landholding right entailing to the increased landless population.

2.2 Poverty Line on Consumption and the Poverty Ratio

There are 2 previous studies which have established poverty line in economic term in Myanmar. One was carried out by UNDP in 2004 to 2005, from which Poverty Profile covering all the nation was published in June 2007. Another study was carried out in 2003 by Dolly Kyaw covering Central Dry Zone and published in 'Arming & Rural Systems Economics' edited by Siegfried Bauer and Lila Bahadur Karki[4]. Both studies estimated the poverty line by Cost of Basic Needs method. This sub-chapter reviews the poverty line and the poverty ratio presented in the previous studies and then

[3] It is assumed that favorable health and educational indicators have bearing with the degree of women's status observed in the Study Area. Even though woman's activities in social forum or in public societies are as inert as that in Japan, no bias in gender has existed in property succession or daily labor (labor division by gender does exist), and women directly manage household budget in many households. Under such circumstances, woman's status is outstandingly high at family level, and this seems to contribute to providing favorable state in the dimensions of health and education.

[4] Issues and Challenges in Rural Development: Compendium on the occasion of 15 years Ph.D. programme "Agricultural Economics and Related Sciences" for Students from Developing Countries, Vol. II, Chapter 9 Rural Poverty Analysis in Myanmar.

establishes its own poverty line based upon household questionnaire survey carried out in 2007 under this Study.

2.2.1 Poverty Line established by Previous Study

UNDP carried out a nationwide questionnaire survey covering as many as 18,600 households with two rounds of data collection from November to December 2004 and in May 2005. The poverty line was established in 2 terms; namely, food poverty and poverty that is composed of food poverty and non-food poverty.

Table 2.2.1 Nutritional Caloric Norms

Calories per day	Rural	Urban
Male adult	2,800	2,200
Female adult	2,450	2,050
Child (<15 years old)	1,800	1,800

Source: National Nutrition Centre, Department of Health, MOH

To establish the food poverty line, the first step is to calculate the caloric requirements of the representative household (calories per adult equivalent per year). UNDP referred to the nutritional caloric norms presented by National Nutrition Centre, Department of Health, Union of Myanmar. The caloric norms are given in Table 2.2.1, based on which food poverty line together with non-food poverty line were estimated as in Table 2.2.2.

Table 2.2.2 Poverty Lines per Adult Equivalent per Year estimated by UNDP as of November 2004

Poverty	Poverty Line, Kyats	Market Rate in late 2004	Poverty Line, US$
Food Poverty Line	118,402	1,650	72 (73%)
Non-food Poverty Line	43,734		26 (27%)
Poverty Line	162,136		98 (100%)
At Year 2007 Price inflated by CPI Ratio of 1.78 (inflation from Nov. 2004 – August 2007)			
Food Poverty Line	210,756	Market Rate in 2007 1,260	167 (73%)
Non-food Poverty Line	77,847		62 (27%)
Poverty Line	288,602		229 (100%)

Source: Poverty Profile, UNDP, June 2007

The poverty lines shown in upper side of Table 2.2.2 is as at November 2004, during which the field survey was carried out, while the lower side shows the poverty lines at current price of August 2007 by applying inflation of 178 %[5] between the period. The table also converts the Kyats value into US$ by applying the prevailing market price at the time. The table points out that Food Poverty Line per adult equivalent at current price of August 2007 is US$ 167 while the non-food Poverty Line is US$ 62, giving a total of US$ 229 which is the Poverty Line. Food poverty consists of 73% of the poverty line while that of non-food poverty is 27%.

Given the poverty lines, UNDP estimated poverty ratio, or poverty headcount index (% of population), by division over the Union. The estimation was made in 2 terms; 1) Food Poverty and 2) Poverty. Food poverty ratio means the proportion of individuals whose consumption expenditure per adult equivalent is lower than the Food Poverty Line. Poverty ratio is the proportion of individuals whose consumption expenditure per adult equivalent is lower than the Poverty Line.

Following table reveals that Food Poverty ratio in rural area is 13%, 8%, 14% for Mandalay, Sagaing and Magway Divisions respectively while the Union's overall rural Food Poverty ratio is 11 percent. As to the Poverty ratio in rural area, 45%, 27% and 44% for Mandalay, Sagaing, Magway divisions respectively are given while the Union's overall rural ratio is 36 percent. Thus, the UNDP study revealed there is higher poverty prevalence in Mandalay and Magway divisions while the situation of Sagaing is comparatively better.

[5] Inflation rate was referred to that of 'Food Index' in Selected Monthly Economic Indicators, CSO.

Table 2.2.3 Food Poverty Ratio and Poverty Ratio estimated by UNDP as of November 2004

Division	Food Poverty Ratio, %			Poverty Ratio, %		
	Rural	Urban	Total	Rural	Urban	Total
Mandalay	13	6	11	45	24	39
Sagaing	8	4	8	27	22	27
Magway	14	7	13	44	26	42
Union	11	6	10	36		32

Source: Poverty Profile, UNDP, June 2007

Dolly Kyaw[6] administered household questionnaire survey in 2003, covering 891 samples in the Central Dry Zone. Methodology applied was same as the UNDP did. At first, she established a food basket based on what the interviewees had consumed with reference to the questionnaire survey result. Then she estimated the current calorie amount consumed, which was 1,859 Kcal. Applying common energy requirement of 2,100 Kcal, the foods volume in the basket was scaled up by 1.13 in order to meet the basic calorie need.

The foods which can give a required 2,100 Kcal per day per head was valued in Kyats by applying prevailing price in the rural areas. Thus, food expenditure which needs to secure 2,100 Kcal was estimated, that is the Food Poverty Line. Non-food poverty line was also estimated to know how much in average non-food expenditure is spent for the people who are on the Food Poverty Line. Totaling the food poverty line and non-food poverty line gives us the Poverty Line, same as UNDP' Poverty Profile aforementioned. Following table summarizes the poverty lines as at 2003, and also those inflation-adjusted by 186% as of August 2007.

Table 2.2.4 Poverty Lines per Adult Equivalent per Year estimated by Dolly Kyaw as of 2003

Poverty	**Poverty Line, Kyats**	**Market Rate in 2003**	**Poverty Line, US$**
Food Poverty Line	78,475	945.5	83 (86%)
Non-food Poverty Line	13,505		14 (14%)
Poverty Line	91,980		97 (100%)
At Year 2007 Price inflated by CPI Ratio of 1.86 (inflation from 2003/04 – August 2007)			
Food Poverty Line	145,964	Market Rate in 2007 1,260	116 (86%)
Non-food Poverty Line	25,119		20 (14%)
Poverty Line	171,083		136 (100%)

Source: Arming & Rural Systems Economics, Chapter 9, Dolly Kyaw

The poverty lines shown in upper side of Table 2.2.4 is as at 20034, while the lower side shows the poverty lines at current price of August 2007 taking into consideration the inflation of 186%[7]. The table converts the Kyats value into US$ by applying the prevailing market price at the time. The table indicates that Food Poverty Line per adult equivalent at current price of August 2007 is US$ 116 while the non-food Poverty Line is US$ 20, giving a total of US$ 136 which is the Poverty Line. Food poverty consists of 86% of the poverty line while that of non-food poverty is 14%.

Applying the poverty line, she estimated the poverty ratio in two ways; 1) without household size adjustment, and 2) with household size adjustment[8]. As following table summarizes, poverty ratio without household size adjustment is 43% while after household size adjustment it comes to 25%. Poverty ratio given by UNDP was already household size adjusted. The household adjusted poverty

Table 2.2.5 Poverty Ratio by Dolly as of 2003

Category	**Ratio, %**
Without household size adjustment	43
With household size adjustment	25

Source: Chapter 9, Arming & Rural Systems Economics

[6] Issues and Challenges in Rural Development: Compendium on the occasion of 15 years Ph.D. programme "Agricultural Economics and Related Sciences" for Students from Developing Countries, Vol. II, Chapter 9
[7] Inflation rate was referred to that of 'Food Index' in Selected Monthly Economic Indicators, CSO.
[8] Children under 15-year old was deducted by a constant of 0.65.

ratio by UNDP was 45%, 27%, and 44% for the 3 divisions in CDZ. These ratios are comparable to 25% by Dolly. Thus UNDP's poverty ratios are higher than that of Dolly. This may be that Dolly may have underestimated non-food expenditure, which was only 14% of the total expenditure on the food poverty line, as compared to 27% by UNDP.

2.2.2 Poverty Line and the Poverty Ratio under this Study

This Study employs Cost of Basic Needs method to establish the Poverty Line same as the previous studies aforementioned. Under this method, there are conventionally 2 poverty lines; 1) Food Poverty Line, and 2) Poverty Line. Food Poverty Line is the minimum food expenditure in monetary term necessary to pay for a consumption basket that will satisfy caloric requirements of a representative household members. Poverty Line is defined as the sum of Food Poverty Line and reasonable non-food expenditure to meet basic human needs. The non-food expenditure is usually calculated as the non-food expenditure for those whose total food expenditures are at around the food poverty line.

1) Food Poverty Line

To establish the Food Poverty Line, we need to calculate the caloric requirements of a representative household in calories per adult equivalent[9]. This Study employs 2,300 kcal per adult equivalent per day as the basis of the requirement. In fact, Dolly used 2,100 kcal while UNDP estimated the basic requirement at 2,303 kcal for the first round survey and 2,295 kcal for the second round survey. UNDP multiplied the size of each population category by the weighted caloric requirement, summed up all population categories, and then divided the sums by the reference household size in adult equivalent. The calculated caloric requirements were 2,303 kcal and 2,295 kcal respectively for the 2 round surveys. The average of the calories is around 2,300 kcal, which is employed in this Study.

Second step is to establish a food basket, based upon what the population actually consumes, in order to meet the basic caloric requirement of 2,300 kcal. To establish the food basket, this Study refers to the food composition table presented by Dolly Kyaw and also the questionnaire survey result by JICA Team carried out in 2007. Following table shows representative food items which are actually consumed by the CDZ population, necessary food consumption scaled up to meet the basic requirement of 2,300 kcal per adult equivalent, and calories contained in each food items[10].

Table 2.2.6 Estimation of Food Basket and Food Poverty Line per Adult Equivalent per Year as at August 2007

Items	Consumption per Year, Kg	Calorie per 100g	Received Calorie (contribution,%)	Unit Price In Aug. 2007	Cost, Kyats/ Year (contribution,%)
Rice	160.6	351	1,545 (67)	600	45,897 (28)
Oil	13.3	884	323 (14)	3,200	25,854 (16)
Meat/fish	11.7	147	47 (2)	2,889	20,424 (12)
Eggs	0.0	156	0 (0)	100	30 (0)
Pulses	23.0	218	137 (6)	1,300	18,118 (11)
Vegetable	61.7	33	56 (2)	844	31,538 (19)
Spices	19.7	144	78 (3)	1,000	11,917 (7)
Sugar/ Jaggary	8.3	382	87 (4)	1,200	6,060 (4)
Beverage	1.4	278	11 (0)	3,162	2,759 (2)
Others	5.7	106	16 (1)	380	1,305 (1)
Total			2,300 (100)		163,903 (100)

Source: the JICA Study Team

By using the prevailing food costs in August 2007, when the survey was carried out, above Table 2.2.6

[9] In estimating the adult equivalent, 0.65 is applied to child for 5 - 14 years old and 0.24 to child from 0 year to 4 years old.

[10] Calorie values came from FAO calorie conversion table of 1985, and calorie recommendations by the Ministry of Agriculture of Japan, etc.

now gives the Food Poverty Line. The Food Poverty Line estimated is 163,903 Kyats per adult equivalent per year at the current price of August 2007. This is equivalent to US$ 130 by applying prevalent market exchange rate of 1,260 Kyats against US$ 1.0. The table also shows a typical food basket, to which rice contributes the most by 67% in terms of calorie composition, followed by oil (14%), and then by pulses (6%), so on so forth. As to monetary value, rice also consists of the largest portion of the food basket by 28%, followed by vegetable (19%), by oil (16%), by meat/fish (12%), etc. There is a unique finding, e.g. though rice contributes as much as 67% in calorie consumption while people spend as low as 28% on it in monetary value.

2) Non-Food Poverty Line

Figure 2.2.1 shows the contents of the non-food item that the people actually consume or spend on. Figure 2.2.1 shows the average expenditure monetary value in Kyats per typical household per year out of valid 397 sample households carried out in baseline survey of year 2007. As we can notice, what comes first is the payment to farm casual labors, followed by purchase of farm input such as chemical fertilizer, seeds, etc, and by charity, by clothing, education, medical expenses, and so on so forth. Obviously, the largest 2 expenditures; payment to farm casual labors and purchase of farm input do not accrue for non-farmer households. Figure 2.2.2 and Figure 2.2.3 show the difference very clearly by illustrating the expenditures by social category; namely, by farm household and non-farm household respectively.

Figure 2.2.2 tells us that typical average farm household spends 850,000 Kyats per year for non-food items, amongst which what comes first is the payment to farm casual labors and followed by purchase of farm input. They spend an average amount of 261,000 Kyats for the payment to farm casual labors and 162,000 Kyats for the farm input, totaling 423,000 Kyats. The total expenditure of 423,000 Kyats arrives at around half of their total expenditure of 850,000 Kyats.

On the other hand, obviously no such expenditures as payment to farm casual labors and purchase of farm input accrue in non-farm households as shown in Figure 2.2.3. They, non-farm households, spend the most on charity, which may root in the deep religious belief in this Country, and then followed by clothing, education, livestock, medical treatment, cleansing, travel, etc. Their total expenditure arrives at around 308,000 Kyats per non-farm household per year, which is about 36% of what an average farm household spends per annum.

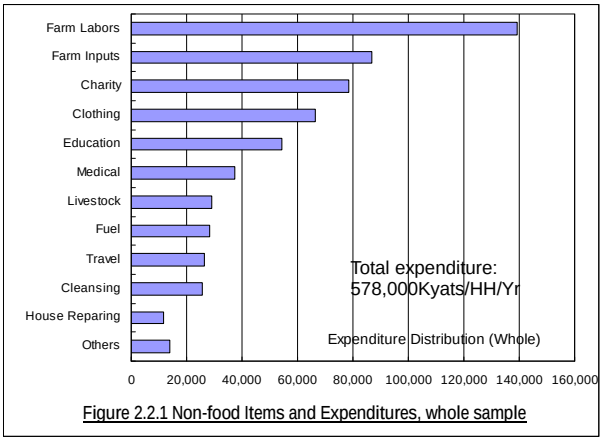


Figure 2.2.1 Non-food Items and Expenditures, whole sample

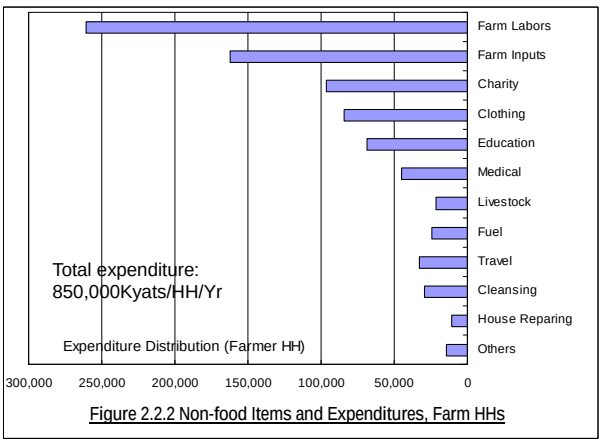


Figure 2.2.2 Non-food Items and Expenditures, Farm HHs

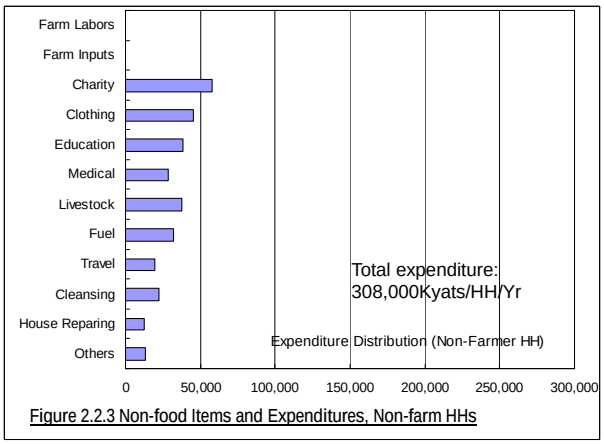


Figure 2.2.3 Non-food Items and Expenditures, Non-farm HHs

The difference on the non-food expenditure between farm household and non-farm household indicates that the non-food poverty line should be established separately by social category, e.g. by farm household and by non-farm household. To establish the non-food poverty line, firstly non-food poverty line excluding the 2 items of payment to farm casual labors and purchase of farm input is estimated, which can be regarded as the Non-food Poverty Line for non-farm household, and then the 2 expenditures are to be topped up for the Non-food Poverty Line for farm household.

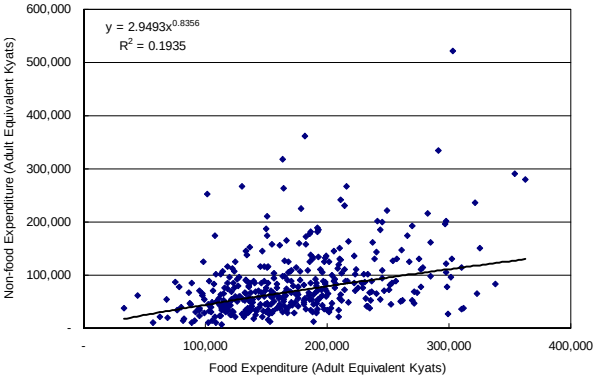


Figure 2.2.4 Estimation of Non-food PL (Base)

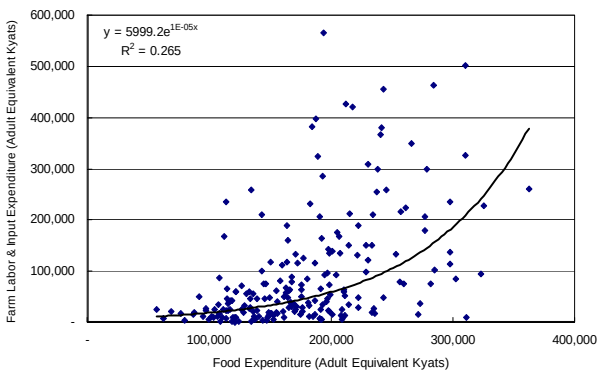


Figure 2.2.5 Estimation of Farm Labor Payment and Farm Input

Figure 2.2.4 illustrates the relationship between food expenditure on its horizontal axis and non-food expenditure excluding the 2 items of payment to farm casual labors and purchase of farm input[11]. Non-food poverty line per adult equivalent per annum is the non-food expenditure on the food poverty line of 163,903 Kyats. This arrives at 67,147 Kyats (US$ 53) per adult equivalent per year, which is the non-food poverty line for non-farm household. Figure 2.2.5 shows the relationship between the sum of the 2 expenditures of payment to farm casual labors and purchase of farm input on its vertical axis and food expenditure on its horizontal axis. The expenditure amount in Kyats corresponding to the food poverty line of 163,903 Kyats is 30,897 (US$ 25). Topping up of this 30,897 Kyats onto 67,147 Kyats arrives at 98,044 Kyats (US$ 78), that is the Non-food Poverty Line for farm household.

3) Poverty Line by Social Stratum

The Poverty Line as aforementioned is the sum of Food Poverty Line and Non-food Poverty Line. The lines are summarized in Table 2.2.7 and illustrated in Figure 2.2.6; which are 261,947 Kyats (US$ 208) per adult equivalent per annum for farm household, 231,050 Kyats (US$ 183) per adult equivalent per annum for non-farm household. The shares of the food poverty line out of the poverty line are 63% and 71 % for farm household and non-farm household respectively.

Table 2.2.7 Poverty Lines per Adult Equivalent per Year estimated by JICA Study as of August 2007

Poverty Line	Farm HH	Non-farm HH	Market Rate in 2007	Farm HH	Non-farm HH
	Poverty Line, Kyats			Poverty Line, US$	
Food Poverty Line	163,903	163,903	1,260	130 (63%)	130 (71%)
Non-food Poverty Line	98,044	67,147		78 (37%)	53 (29%)
Poverty Line	261,947	231,050		208 (100%)	183 (100%)

Source: JICA Study Team

[11] One may say that the non-food poverty line can be estimated based on the whole non-food expenditures by social category, in that non-food poverty line based on what is shown in Figure 1.2.2 and on what is shown in Figure 1.2.3. In fact, this may be one of the estimation methodologies, however this estimation would lead us to lower non-food poverty line for non-farm household since their expenditures are obviously lower than that of farm household simply because they are poorer. As human being equal in its right to make livelihood, the JICA Team is of the opinion that expenditures excluding the 2 items of payment to farm casual labors and purchase of farm input should be equally pursued regardless he/she is farmer or not. Therefore, the non-food poverty line in this report was firstly estimated for those excluding the 2 items regardless he/she is farmer or not, and then the 2 items were topped up on the base non-food poverty line.

Poverty lines estimated above are the necessary expenditures in Kyats per adult equivalent per annum to keep their livelihood by uptaking 2,300 kcal per day and also basic non-food items. By multiplying number of typical family members into the poverty line per adult equivalent per annum gives us a typical poverty line now estimated per household per annum. According to the baseline survey carried out by JICA Team in 2007, average number of family members is 5.141 and this comes to 4.680 after multiplying reduction factors[12] to children against adult-equivalent in order to adjust caloric requirement for children. The poverty lines per household per annum are therefore worked out as shown in Table 2.2.8. The poverty lines are about 1.2 million Kyats (US$ 973) and about 1.1 million Kyats (US$ 858) for farm household and non-farm household respectively.

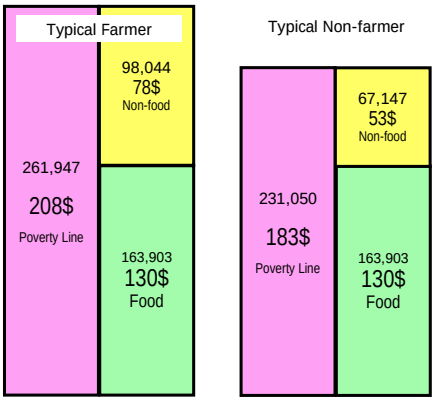


Figure 2.2.6 Poverty Lines for Farm HH and Non-FHH per Adult Equivalent per Year

Table 2.2.8 Poverty Lines per Typical Household per Year estimated by JICA Study as of August 2007

Poverty Line	Farm HH	Non-farm HH	Market Rate in 2007	Farm HH	Non-farm HH
	Poverty Line, Kyats			Poverty Line, US$	
Food Poverty Line	767,066	767,066	1,260	609 (63%)	609 (71%)
Non-food Poverty Line	458,846	314,248		364 (37%)	249 (29%)
Poverty Line	1,225,912	1,081,314		973 (100%)	858 (100%)

Source: JICA Study Team

In countries that poverty lines have not yet been established based upon baseline survey, a simple methodology is often applied. The simple method estimates poverty line to be just US$ 1 per day per person. This gives us US$ 365 per person per annum. Given a typical number of family members of 4.68, the simple poverty line for a typical household comes to US$ 1,708. The poverty lines shown in Table 2.2.8, US$ 973 and US$ 858 for farm household and non-farm household respectively, are found to be about half of the simple poverty line of US$ 1,708. This fact attributes to the low prices of the major commodities, especially rice, in the Study Area, and in the Country by and large.

4) Poverty Ratio

Given the Poverty Lines in Table 2.2.7, poverty ratios are estimated by all the sampled households, by farm household and non-farm household separately, and further poverty ratio only for farm casual labor household, the poorest of the poor in most cases, is estimated. Then poverty ratios by gender, by male-headed household and by female-headed household, are estimated separately. In addition, poverty ratios by village are also estimated. The poverty ratios for all the samples, by gender, and for the villages are calculated by weighting the poverty ratios for farm and non-farm households with the sample numbers respectively.

Figure 2.2.7 shows the cumulative adult equivalent headcount by category such as farm HH, non-farm HH and farm-casual labor HH, and Figure 2.2.8 by gender such as male-headed HH and female-headed HH, versus log of the annual expenditure per adult equivalent. The poverty line of 261,947 Kyats per adult equivalent per year is at the scale '5.42' in log while the poverty line of 231,050 Kyats is at the scale '5.36'. With these log scales, poverty ratios are calculated as summarized in Table 2.2.9, and pointed out are:

1) Poverty ratio by all the sampled households is 43%, and the ratio for farm household only is 33%

[12] In estimating the adult equivalent, 0.65 is applied to child for 5 - 14 years old and 0.24 to child from 0 year to 4 years old, Poverty Lines in Theory and Practice, Living Standard Measurement Study, Working Paper No.133, WB)

whereas the one for non-farm household is 55%. This clearly shows poverty for non-farm household is deeper than that of farm-household. Further the poverty ratio for farm casual labor is as high as 75%. This result clearly shows where the poorest people are; that is in the category of farm casual labors.

2) Poverty ratio by gender shows deference as expected; namely, the ratio for male-headed household is 43% while the one for female-headed household is 49%. Though the sample number for female-headed household is not enough, say only 34 samples (only 8% out of whole 419 sample households), yet we can see the tendency for female-headed household suffering more in poverty.

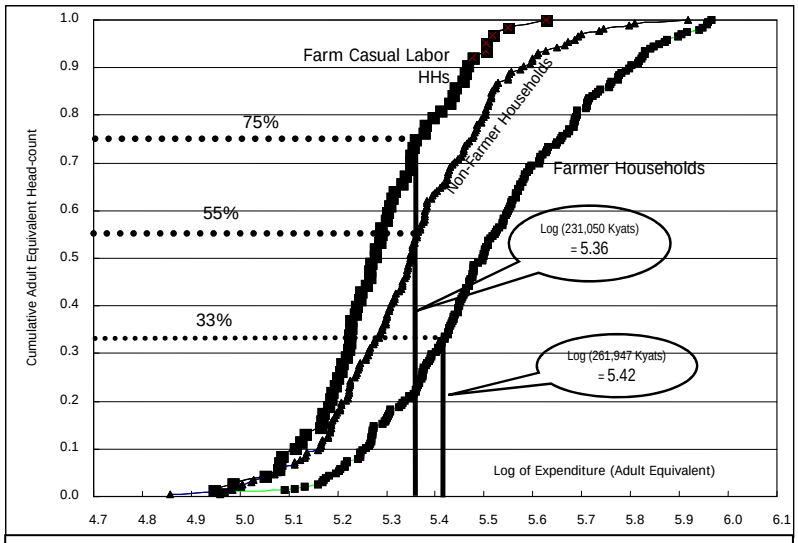


Figure 2.2.7 Estimation of Farm Labor Payment and Farm Input

3) Poverty ratio by village varies widely from 31% to as high as 72% (see Table 2.2.9). Villages showing relatively low poverty ratio are Ar La Ka Pa village (31%), Ma Gyi Sauk village (42%), Khaungkawe village (43%) and Legaing village (43%). Ar La Ka Pa village is endowed with good accessibility to urban areas by which economy is facilitated. Khaungkawe village has lots of cottage industry activities giving employment opportunities to the villagers, while such 2 villages as Ma Gyi Sauk and Legaing are equipped with irrigation facilities whereby 2 paddy croppings are available. On the other hand, the poverty ratio for Mingan village is 56% and the one for Magyi village is as high as 72%, the highest amongst the 6 villages. These 2 villages are located in very remote areas and hit often by drought, resulting in unstable agricultural production.

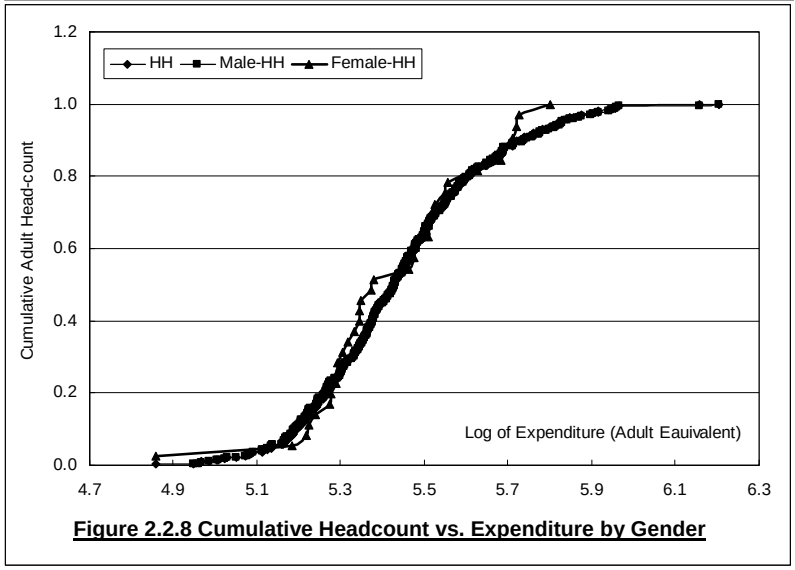


Figure 2.2.8 Cumulative Headcount vs. Expenditure by Gender

4) Table 2.2.9 shows poverty gap ratio as well, indicating the depth of the poverty; corresponding to the distance between the poverty line and the average of expenditures for those who fall below the poverty line. In other words, adding the monetary value calculated by multiplying the poverty gap ratio into the poverty line, the person can be lifted up to the poverty line. The poverty gap ratios are; 11%, 8%, 14%, and 20% for whole sampled households, farm household, non-farm household, and farm casual labor household. It is indicated that the depth of the poverty for non-farm household is deeper than that of farm household, and again that of farm casual labor

household is further deeper than that of non-farm household. The poverty for farm casual labor household is more than 2 times deeper than that of farm household (20% vs. 8%).

Table 2.2.9 Poverty Ratios by Category and by Village

Particular	Valid Sample No.	Poverty Ratio, % (Expenditure)	Poverty Gap Ratio (%)	Poverty Square Gap Ratio (%)
Whole of 6 Villages	397	**43**	10.69	3.68
Farm HH	212	**33**	8.19	2.75
Non-farm HH	185	**55**	13.56	4.74
Farm Casual Labor	66	**75**	19.68	6.75
Male Headed HH	363	**43**	10.73	3.71
Female Headed HH	34	**49**	10.20	3.36
Mingan village	21	56	8.34	2.06
Magyi village	49	72	23.33	9.06
Khaungkawe village	48	43	9.88	3.32
Ar La Ka Pa village	130	31	6.97	2.21
Ma Gyi Sauk village	53	42	8.56	5.90
Legaing village	96	44	9.65	2.89

Source: JICA Study Team

5) Necessary Sum of Raising the Poor to the Poverty Line

The poverty gap ratio is used to provide an estimate of the sums required to raise the consumption level of all poor families up to the poverty line. For example, at all the village average level, the poverty gap ratio stands at 11% which means that the additional expenditure to raise the poor up to the poverty line equals to 11% of the poverty line as average. Here the average poverty line arrives at 247,594 Kyats by weighting the 261,947 Kyats for farm household poverty line and 231,050 Kyats for non-farm household poverty line with its sample numbers, 212 and 185 respectively. Then, by multiplying the target population with the additional expenditure, we can know how much total sum is required to raise all the poor people up to the poverty line.

Table 2.2.10 calculates the necessary sum to raise all the poor in CDZ. To raise a typical poor, there should be an additional expenditure of 26,463 Kyats per year (equivalent to 21 US$ by applying market prevalent ratio of 1,260 Kyats against US$ 1.0 as of August 2007). Multiplying the population to the additional expenditure arrives at 102 billion Kyats (US$ 93 million) per year for the whole population of CDZ (51 TSs), and 98 billion Kyats (US$ 81 million) per year for the whole rural population of CDZ (51 TSs). Note is that the poverty line, 247,594 Kyats, was estimated on basis of household survey done in 6 villages for the FY 2007/08 pilot project, thereby in essence it can be applied to the rural population only but not accurate in applying to the population in urban area.

Table 2.2.10 Estimation of Necessary Sum of Raising the Poor to the Poverty Line

Particular	Estimation	US$ (1,260 Kyats/1US$)	Remarks
Poverty Line, Kyats	247,549		Weighted mean of FHH &Non-HH
Poverty Ratio, %	43		
Poverty Gap Ratio, %	10.69		
Required Amount per Poor, Kyats & US$	**26,463**	**21**	@1,260Kyats/$
Population in CDZ in 2003	9,841,620		for 51 townships
Rural Population in CDZ in 2003	8,293,199		84%
Urban Population in CDZ in 2003	1,548,421		16%
Adult equivalent Pop. in CDZ in 2003	8,959,109		X 4.680 / 5.141 Factor to estimate adult equivalent population
Adult Equivalent Rural Pop. in CDZ in 2003	7,549,537		
Adult Equivalent Urban Pop. in CDZ in 2003	1,409,572		
Required Sum for Total Pop. of CDZ, Kyats	**101,946,507,630**	**80,909,927**	exclusive of City Council Area
Required Sum for Rural Pop. of CDZ, Kyats	**85,906,860,981**	**68,180,048**	
Required Sum for Urban Pop. of CDZ, Kyats	16,039,646,649	12,729,879	reference

Source: JICA Study Team

2.3 Inequality in Income: Gini Index

There should be inequality in villagers' income. The inequality itself may be justified if it is not so big since it may spur people's competition towards economic vigorous activities. However, if the inequality between the rich and poor, or between the Haves and Have-nots, are considerably high, it may not be accepted socially and social security cost may arise in some societies. Here inequality among villagers is examined by using the baseline survey results administered to the 6 target villages for the pilot project implemented in FY 2006/07.

2.3.1 Measuring of the Inequality: Gini Index

To measure the inequality among village members, Gini index is employed in this Study. Gini index is understood by the geometry definition "Area enclosed by the *Lorenz* curve and the diagonal". If one may take the horizontal axis as the cumulative share of people from lower income and draw the cumulative share of income earned, then the curve becomes *Lorenz* curve, and the area between the *Lorenz* curve and the straight line (diagonal = even distribution line) becomes Gini Index (the triangular area composed of the axis and the diagonal is assumed to be 1).

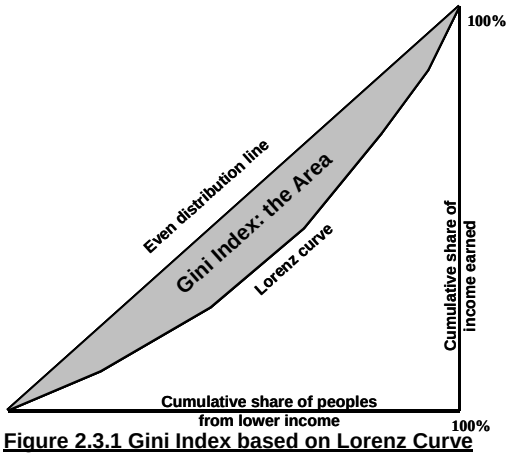


Figure 2.3.1 Gini Index based on Lorenz Curve

Given the magnitude of the Gini Index, one can understand the value of the Gini Index as the degree of income inequality. The Gini Index is 0.3 in "the society where one king owns 30 % of the whole income and the other people have others" and also in "the society where the citizen layer of 70% gets all income and the slave layer of 30% gets nothing"[13]. There is no clear definition of the difference in this case. A right table is one standard to understand the degree of inequality according to the value of the Gini Index.

Table 2.3.1 Standard Interpretation of Gini Index

Gini Index	Standard Interpretation of Gini Index
Less than 0.1	There is an artificial background for leveling.
0.1 – 0.2	Though considerably equal, there is an anxiety to obstruct the effort to the improvement.
0.2 – 0.3	Usual distribution type that exists in general in society.
0.3 – 0.4	Though there are some differences, there is also a desirable respect in the improvement through competition.
0.4 – 0.5	The difference is serious.
Over 0.5	The improvement is required except under special circumstances

Source: Wikipedia

2.3.2 Gini Index for the 6 Villages

Figure 2.3.2 shows the *Lorenz* curve for the 6 villages, based on which Gini Indexes are calculated. Table 2.3.2 summarizes the Gini Index by village with incomes by such category as whole sample, farm households who in most cases are the richest, farm casual labor households who in turn are the poorest, etc. Figure 2.3.3 compares

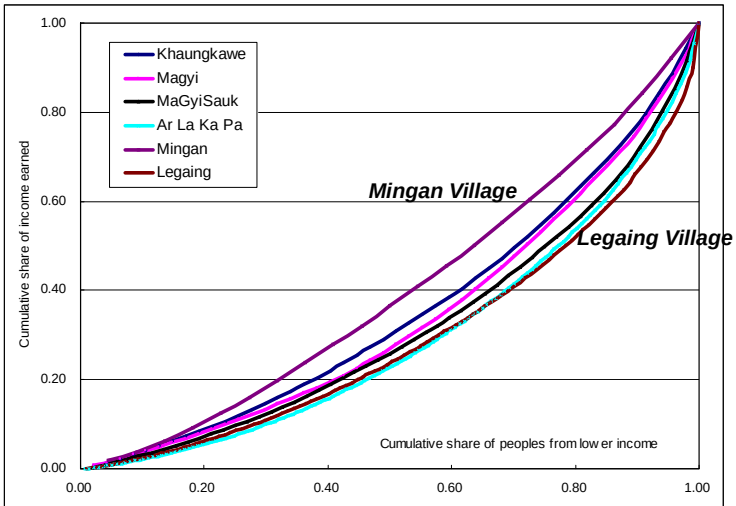


Figure 2.3.2 Lorenz Curve for the 6 Villages

[13] This Gini Index is decided by the area, and is not related to the shape of the Lorenz curve. Therefore, even if the ratio of a rich layer to the poor layer is different, the Gini Index becomes the same in some cases.

the Gini indexes by village and Figure 2.3.4 comparatively shows the annual incomes of farm household and farm casual labor household; the richest and the poorest (since almost no farm casual labor household in Mingan village, it was replaced by income of those who earn from sandstone ware production, the poorest of the people in the village). It is noted that:

1) Gini Index ranges from 0.197 for Mingan Village to 0.411 for the Legaing Village with an average of 0.387. Mingan village is only the one whose Gini index is lower than 0.2 while there are 2 villages where the Gini index is already over 0.4, which are Ar La Ka Pa and Legaing.

2) Mingan village's Gini index is the lowest, 0.197, and also the average income per year per household is 817,317 Kyats which is also the lowest amongst the 6 villages. This village is located in remote area in Bago Hills and very often hit by drought, resulting in low and unstable agricultural production. Here in this village, we may say people are poor and equally poor.

3) In 2 villages of Ar La Ka Pa and Legaing where the Gini index is over 0.4, we may say the difference between rich and poor is considered somewhat already serious. As indicated in Figure 2.3.4, the gap in annual income between the farm household and farm casual labor reaches as much as 3 times. Ar La Ka Pa village is situated at a relatively accessible location to urban areas where some villagers may have fetched good opportunities to raise their income while the others may have not. Legaing village is blessed with irrigated paddy field, whereby income gap between the farmer and landless may have become large, giving the Gini Index over 0.4.

Table 2.3.2 Gini Index by Village and Income by Source

Village Name	Valid Sample No.	Average of Income (Kyats/Year/HH)							Gini Index
		Whole	Farm Household	Casual Farm Labor	Livestock	Cottage Industry		Others	
						Employed	Self-running		
Mingan	22	817,317	1,037,467	-	-	789,600	724,545	584,755	**0.197**
Magyi	47	1,131,688	1,147,471	550,700	707,500	-	1,159,876	2,367,500	**0.321**
Khaungkawe	47	1,059,165	1,442,082	894,750	841,897	1,204,173	877,797	499,300	**0.291**
Ar La Ka Pa	139	1,543,106	2,022,950	860,665	1,684,475	1,066,625	1,279,183	964,777	**0.406**
Ma Gyi Sauk	52	1,126,079	1,183,606	597,940	723,000	1,455,000	1,709,000	1,231,108	**0.363**
Legaing	108	1,269,271	2,184,371	748,074	1,068,800	708,500	1,199,112	1,067,423	**0.411**
6 Villages	415	1,304,199	1,669,984	754,956	1,200,146	1,063,644	1,127,951	1,286,556	**0.387**

Source: JICA Study Team

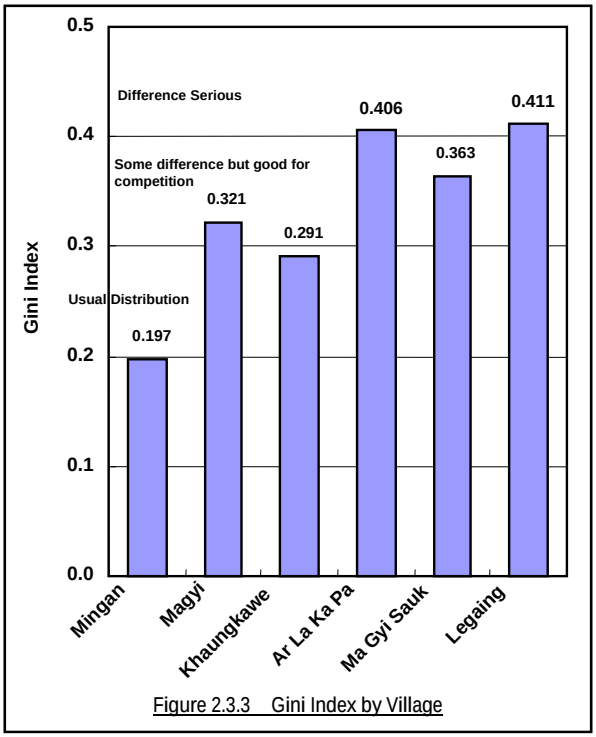


Figure 2.3.3 Gini Index by Village

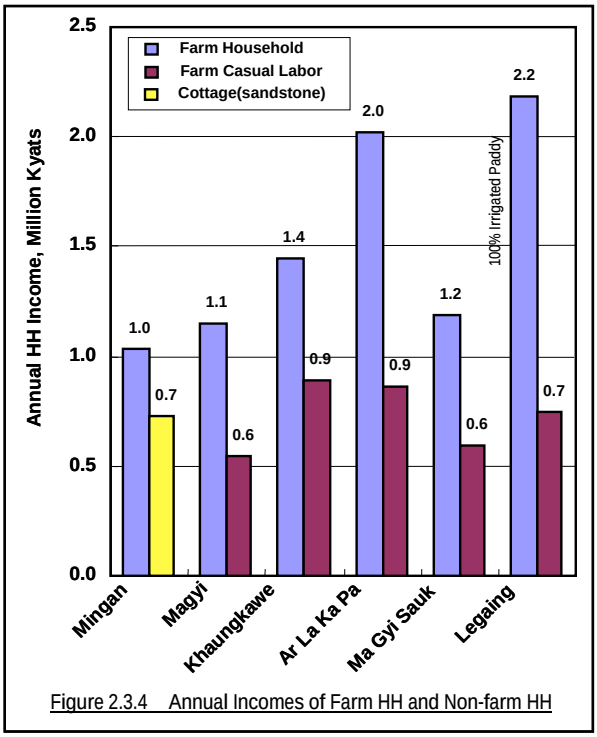


Figure 2.3.4 Annual Incomes of Farm HH and Non-farm HH

Taking into account above results, one may suggest that income for the poor should be increased. In fact, even in case that both husband and wife have been engaged in farm casual labor work throughout year, they cannot get out of the poverty, as indicated by their annual income 648,000 Kyats (1,800 x 360 days) vs. 1,081,314 Kyats that is the poverty line for non-farm household. They need to find additional means of income, or they cannot get out of the poverty. Assistances of increasing their income or diversifying their income should be provided.

In addition, a distribution policy from the rich, mostly farmers, to the poor may have to be put in place since there are already villages where a considerable income gap is found as Gini index over 0.4[14]. With respect to this, there is land tax for farmers in Myanmar, which is about 5 Kyats per acre for a productive lands and as little as 1 Kyats per acre for non-fertile lands. These rates were established under the colonial rule, since which they have not been revised. One of the policies for raising the poor in economic term or narrowing the gap between the rich and the poor may be to raise these land taxes, and then distribute according to social needs.

[14] As a reference, Gini index of Japan is 0.526 before tax adjustment, and this is converted into 0.387 after taking into account social warfare programme, tax redistribution, pension payment, etc., Source: Report on Income Distribution, August 2007, Ministry of Labor and Welfare)

2.4 Characteristics of Rural People

In this sub-chapter, livelihood and life of the rural people are examined from different angles. Referred to is the baseline survey result carried out in 6 target villages for pilot project in 2007/08 and also measurement results of the household members' body weight and height relevant to their nutritional condition.

Sample numbers are 228 for farm household and 191 for non-farm household, totaling to 419 households. Out of the 191 non-farm households, daily wage farm labors are 67, those who mainly earn from livestock are 11, and those who are mainly engaged in cottage industry are 16 for employed and 69 for self-running, and then others such as government officers, teachers, etc. are 28 households. Sample by village and by the main income source is listed in the Table 2.4.1. Sampling was randomly done.

Table 2.4.1 Summary of the Samples Surveyed

Village	Farm Household	Non Farm Household (Landless)					Total
		Casual Farm Labor	Livestock	Cottage Industry		Others	
				Employed	Self-running		
Mingan	11	0	0	2	8	1	22
Magyi	41	2	2	0	5	-	50
Khaungkawe	29	1	2	5	9	2	48
Ar La Ka Pa	76	17	4	6	23	13	139
Ma Gyi Sauk	31	9	1	1	5	6	53
Legaing	40	38	2	2	19	6	107
Total	**228**	**67**	**11**	**16**	**69**	**28**	**419**
% b/t FHH & Non FHH	54	46					100
% b/t FHH & Non FHH		16	3	4	16	7	100
% among Non FHH	0	35	6	8	36	15	100

Source: JICA Base Line Survey 2007

2.4.1 Family Structure, Age Cohort and Education

As seen from Table 2.4.2, average family member per household ranges from 4.9 at Legaing Village to 5.6 at Ma Gyi Sauk Village with overall average of 5.1 for the 6 villages. Average age of husbands is 49.0 years old while that of wife is 47.0 years old. Average number of children for boy is 1.2 and that of girl is 1.3, which gives 2.5 as average number of children per family. As seen from the table, they run nuclear family as does Bamar race commonly.

Table 2.4.2 Family Structure of the Samples Surveyed

Village	Persons/ HH	Age		Average of the children's number by household		
		Husband	Wife	Male	Female	Total
Mingan	5.2	49.3	48.9	1.1	1.4	2.5
Magyi	5.5	52.1	49.4	1.4	1.4	2.9
Khaungkawe	5.4	47.0	44.2	1.2	1.3	2.5
Ma Gyi Sauk	5.6	50.1	47.8	1.5	1.4	2.9
Ar La Ka Pa	4.9	48.8	46.9	1.0	1.3	2.3
Legaing	4.9	47.9	46.5	1.1	1.4	2.5
6 Villages	5.1	49.0	47.0	1.2	1.3	2.5

Source: JICA Base Line Survey 2007

Figure 2.4.1 and Figure 2.4.2 show the age cohort for male and female of the sampled household members respectively. As shown in the figures, there may be two points to mention; 1) reduction of age groups of 40 – 49 and 30 –39 for male, and 2) big reduction of the number for children's age group, 0 – 9 year age. The former may be attributable to off-house working which is common in rural areas of CDZ, while the latter to reduction of the children's number per family which may have been supported

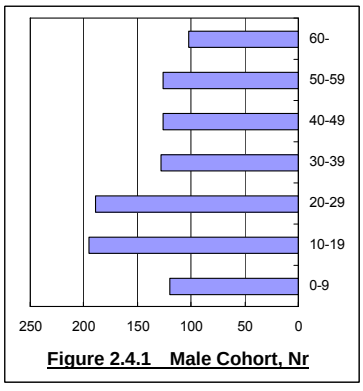


Figure 2.4.1 Male Cohort, Nr

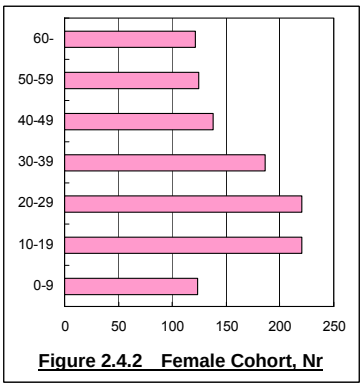


Figure 2.4.2 Female Cohort, Nr

by family planning though the extent is not exactly known.

Figure 2.4.3 shows the final education level by husband and by wife, namely by gender. As one may see, the lower level of education the more wife finished, while the higher level of education the more husband finished. Also 9 wives out of total 382 sampled wives have not received any education though no such case can be found in case of husband. Nowadays, it is said that there is little gender imbalance between boy and girl education, however as far as parents age cohort is concerned, we can see gender gap in education level.

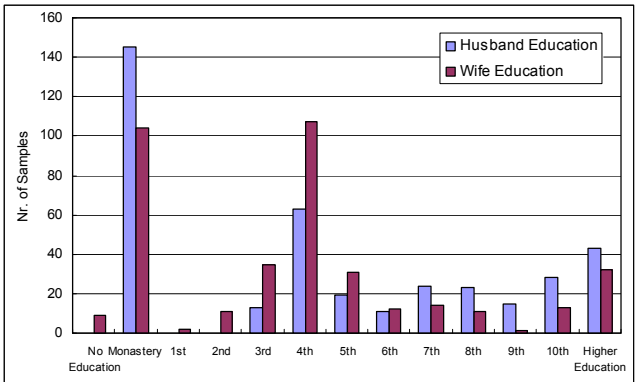


Figure 2.4.3 Final Education by Gender

2.4.2 Income

Figure 2.4.4 shows average annual household income by farm HHs and non-farm HHs by village. Figure 2.4.5 further elaborates the annual household income by their main income source as such that farm labor, for example, means the biggest share of his/her income comes from farm casual labor, livestock means the biggest share of his/her income comes from livestock raising, so on so forth.

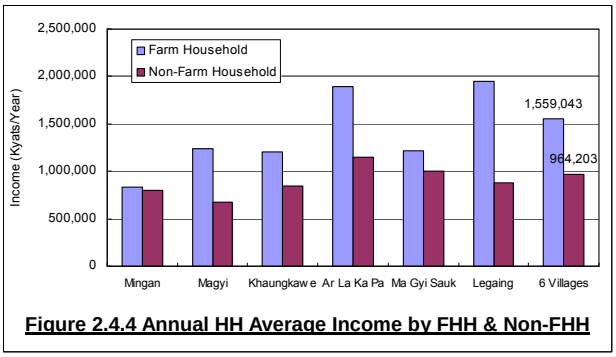


Figure 2.4.4 Annual HH Average Income by FHH & Non-FHH

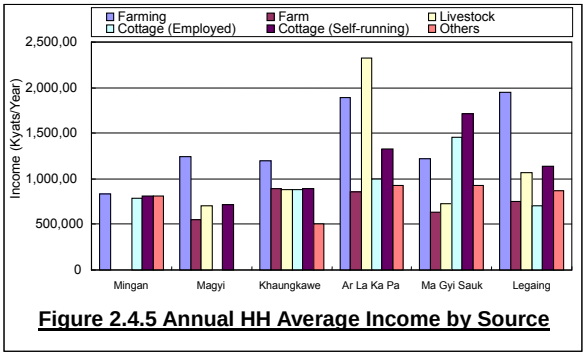


Figure 2.4.5 Annual HH Average Income by Source

Figure 2.4.4 clearly shows that farm household income is bigger than that of non-farm household in any of the villages, with an average of 1.56 million Kyats per household per annum for farm household as against 964,000 Kyats for non-farm household. Figure 2.4.5 implies that the poorest villagers may be in the stratum for those who are engaged in farm casual labor works. In most of the cases, farm labors' income is smaller than the others.

Table 2.4.3 shows their household income in relation to the education level of husband. Of the total valid reply of 384, 221 (58%) respondents finished their final education in primary or in monastery, while 163 (42%) respondents finished in higher standard than primary level. There is not always clear relationship between the two indicators. However one thing clear is that as far as average is concerned those who had attended only primary or monastery school earn less than those who have attended more than primary school. The average income for the former is 1.2 million Kyats while that of latter is 1.6 million Kyats per

Table 2.4.3 Husband Education vs. Family Income

Standard	Education for Husband	Av. of Family Income (Kyats/year/HH)
Monastery	145	1,295,574
1st	0	-
2nd	0	-
3rd	13	751,088
4th	63	1,024,668
Subtotal	221	Average 1,227,008
5th	19	1,202,132
6th	11	1,834,673
7th	24	1,070,527
8th	23	1,956,950
9th	15	1,312,043
10th	28	1,719,113
Higher Education	43	1,645,051
Subtotal	163	Average 1,656,301
Total	384	Average 1,441,165

household.

2.4.3 Income by Household Member

Bamar race establishes a nuclear family when they get married. Hence, husband, wife and children are principal household members, besides, their parents also consist of the member in some cases and even their relatives abide under the same livelihood in a few cases. Livelihood in a household is roughly divided into the income (with its sources) and the expenditure. Here, the breakdown of the latter, expenditure into each member is not very significant since expense for food covers 63% (in the case of farm households) - 71% (of non-farm households) of the total household expenditure according to the baseline survey. On the contrary, it is often possible to obtain the breakdown of household income by its members. In this context, it would be relevant to interpret income from farming, animal husbandry and remittance as that derived from the members as a whole rather than specifying their sources into particular individual members.

Figure 2.4.6 shows the annual household income by its members/ activities in an average farm household (222 samples were referred to). The database of this figure stems from the result of the baseline survey in 2007/08. The farming income is dealt as an income earned by the members as a whole. The figure reveals that income from non-farming origins contributes very little portion in a farm household income. There is an income for the husband from small-scale industry he himself runs (see 2nd bar chart from the left), and all other incomes than this, earned by other household members are in fact negligible. In this figure, income of the wife remains lower level than that of her daughter. However, the wife's contribution may have been recorded as a part of that of the cottage run by the husband.

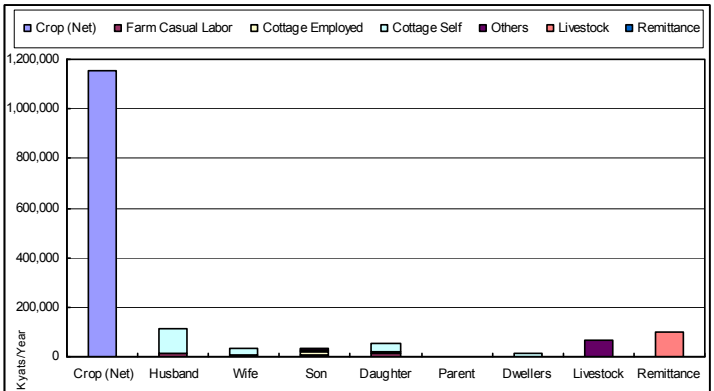


Figure 2.4.6 Annual Income in a Farm Household by Members

Figure 2.4.7 shows the annual household income by its members/ activities in a standard non-farm household (190 samples were referred to). It indicates outstanding share of the husband's income, in particular that from a small-scale industry he engages in contributes much. Income of the wife follows that of the husband, but its share is only about a fourth thereof. Here also, the same reason as stated above for the farm household income is conceivable in its background. In other words, both husband and wife run their small-scale home-industry in very many cases though the income is generally reported as the income of the husband.

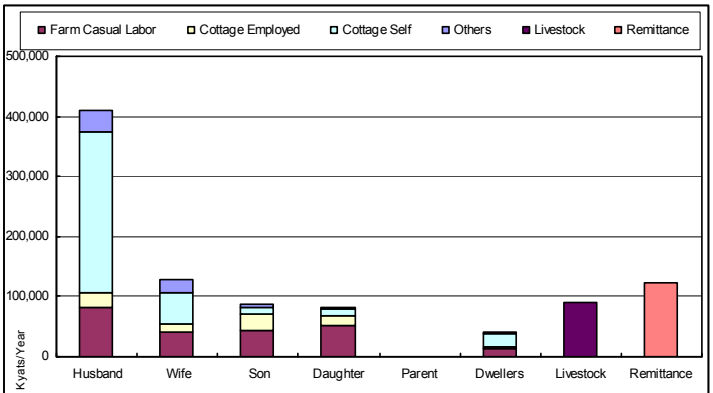


Figure 2.4.7 Annual Income in a Non-farm Household by Members

Figure 2.4.8 presents income and its sources by household member in a typical farm laborer's family (67 samples were referred to, and here, the farm laborer's household is termed as that in which wage

earning by farm labor has the largest share in its livelihood. Also, samples classified as non-farm household include those of farm laborers.) As shown in the figure, the income by the husband has the largest share, followed by that of the daughter and the wife. In this concern, labor wage per diem for a male laborer is around 1,000 Kyats, while that for a female one is only 700 – 800 Kyats, or 70 ~ 80% of that of a male laborer.

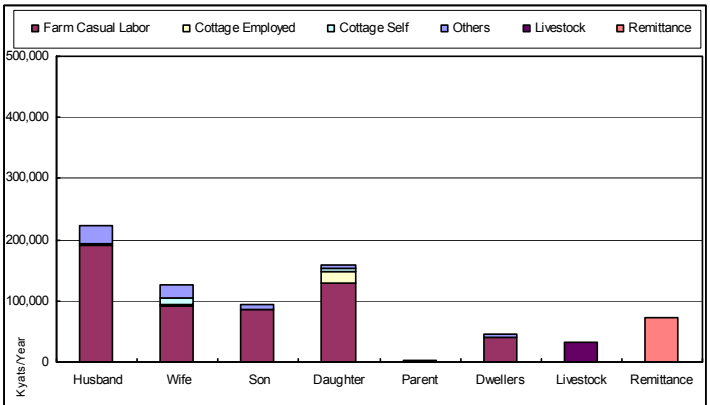


Figure 2.4.8 Annual Income in a Farm Laborer's Household

Namely, as far as the income from farm labor wage is concerned, that earned by the husband (or father) amounts the highest, while the daughter is engaged in farm labor services for almost the same or somewhat less days only as that engaged by her father if the days are estimated based on the above cited rate of labor wage per diem (where the rate of earned amount by wage is 67% for daughter's wage income). Since weeding and harvest are of delicate practices, employers tends to prefer female laborers to male, and this tendency possibly reflects in the annual working days of daughter's farm labor that is comparable to her father's.

Income from animal husbandry and remittance are dealt as the income as the whole household member in any of the above 3 figures. It is non-farm households where the income from livestock has the largest share in their annual livelihood (amounting to 90,000 Kyats/HH), followed by farm household (65,000Kyats/HH), while that of farm laborer's households remains in the lowest share (72,000Kyats/HH). The reason why share of remittance is larger in non-farm households than in farm household might be interpreted as the children in the former household do not have farmland (leasehold right) for their farming and as a result they cannot help leaving households seeking for casual labor earning in and out of their village.

2.4.4 Trend of Income and Expenditure through a Year

Figures 2.4.9 – 2.4.11 show the trend of income and expenditure by such social stratum as 1) farm casual labor household, 2) paddy farmer household, and 3) upland farmer household respectively. Figure 2.4.9 shows that typical farm casual labor household can earn more in 2 times a year as farm preparation period and harvesting time. The former takes place in June – August, corresponding to the beginning of rainy season, and the latter is in November and December. Their expenditure pattern shows 2 peaks such as in April and November. There is New Year celebration in Myanmar in April, spending some items including cloth for the celebration. Expenditure in November is corresponding to some ceremonies, including donation,

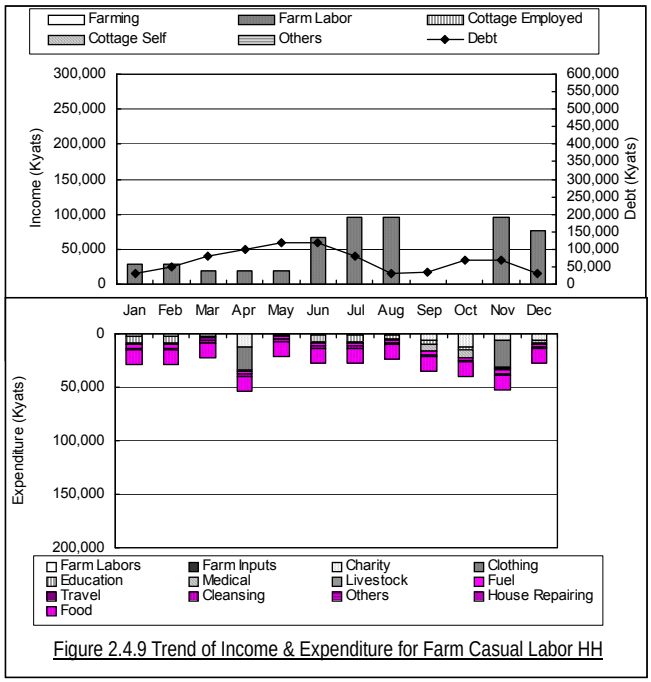


Figure 2.4.9 Trend of Income & Expenditure for Farm Casual Labor HH

associated with harvest.

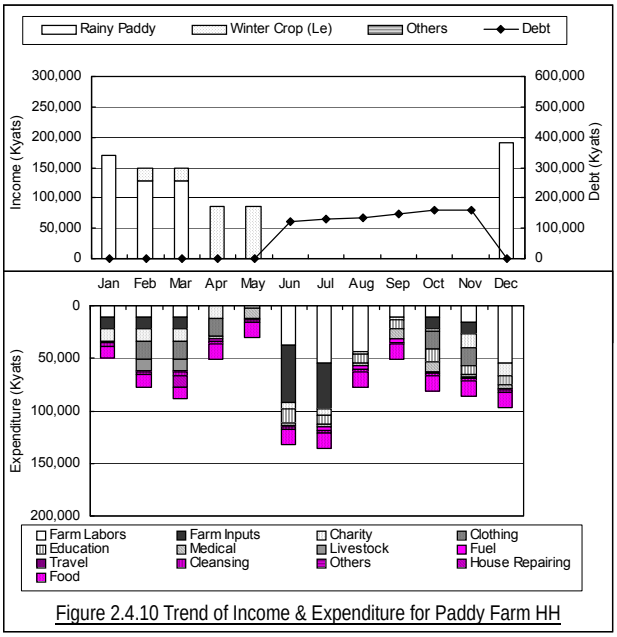


Figure 2.4.10 Trend of Income & Expenditure for Paddy Farm HH

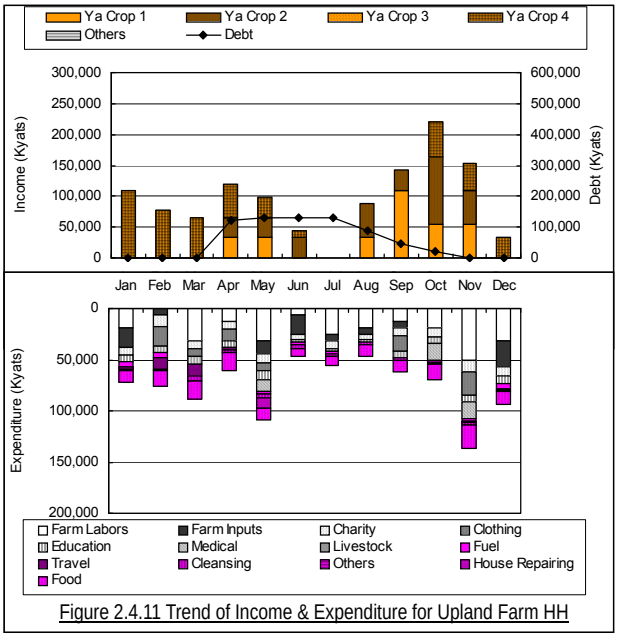


Figure 2.4.11 Trend of Income & Expenditure for Upland Farm HH

According to Figure 2.4.10, the typical paddy farmer household spends much in June and July for the preparation of rainy season paddy. As we can see, expenditure on labor and farm input becomes very high in June and July while in December expenditure only on labor becomes high since winter crop, mostly chick pea, does not require chemical fertilizer. Their income starts appearing in December corresponding to the harvest of rainy season paddy, then continues till next year probably April to March depending on how long he can keep the paddy and also how much he can produce winter crop following the rainy paddy. Their debt usually starts in the season of rainy paddy preparation, and continues until harvest.

Figure 2.4.11 shows even income than paddy farmer because most of upland farmers cultivate 2 – 3 crops by mixed cropping, e.g. sesame with pigeon pea, and also by relay cropping. Thanks to that system, their income becomes slightly even throughout year than paddy farmer household. The expenditure pattern is very much affected by preparation of rainy season crop and winter crop, similar to paddy farmer household. Their debt may start as early as in April, corresponding to New Year celebration, and keep a constant level probably until July/ August. In August, harvest of early upland crop, like sesame, can be started thereby reducing the debt amount.

2.4.5 Crop Production by Village

Figure 2.4.12 shows sesame production by village and by harvests indexes such as 'almost nothing', 'worse', 'average', and 'better' according to the farmers' perception. Looking at the harvest that the respondents replied as average, one may recognize that the harvests for such three villages as Mingan, Magyi, and Khaungkawe are much lower as 3.2 to 3.7 baskets per acre than the ones in other 3 villages. Harvest in Ar La Ka Pa Village is 6.5, 5.7 in Ma Gyi Sauk, and 6.6 baskets per acre in Legaing Village. It may be noteworthy that there is nearly about two times production difference between the former villages and

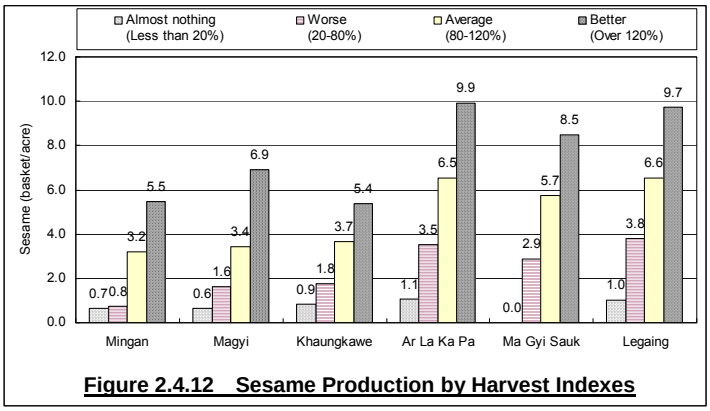


Figure 2.4.12 Sesame Production by Harvest Indexes

latter villages though all these villages are located in CDZ.

Likewise, Figure 2.4.13 shows paddy harvest by village and by harvests indexes such as again 'almost nothing', 'worse', 'average', and 'better' (in Khaungkawe and Mingan Villages, no paddy data available because of its tiny cultivation area). Paddy harvest in Legaing Village, which is located in favorable agricultural condition, is the highest thanks to the irrigation, reaching to 70 baskets per acre as average and over 80 baskets per acre in case of 'better'. Paddy harvests in Magyi village is the lowest because all the paddy cultivation is practiced under rain-fed, while that of Ar La Ka Pa is in Kaing/ Kyun area of Ayeyarwady River and paddy field in Ma Gyi Sauk is partly irrigated by a pumping station operated by Irrigation Department.

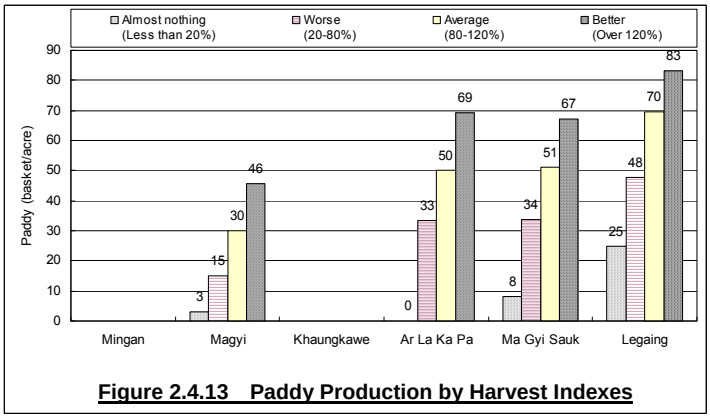


Figure 2.4.13 Paddy Production by Harvest Indexes

2.4.6 Debt in Villagers

Unable to make ends meet leads to borrowing money. Borrowing money is very common phenomena in almost all villages in CDZ. Commonly applied interest per month is 5% with collateral, and without collateral it is around 10% and in few cases it goes to as high as 20%. In general, the interest for government loan is the lowest, which 2.6 % per month (see Table 2.4.4).

Table 2.4.4 Interest per Month

Lender	Interest (%)
With Collateral	5.3
Without Collateral	10.0
From Government	2.6

Source: JICA Questionnaire

Borrowing money is practiced for many villagers regardless of him being farmer or being non-farm household. Figure 2.4.14 summarizes the situation of debt, in that we can see the average debt amount for the 6 villages at about 230,000 Kyats. The highest debt amount can be seen in farm households (about 270,000 Kyats) while the lowest debt amount in casual farm labor households (120,000 Kyats). This does not necessarily mean that the casual farm labors are in little debt but rather it implies that they cannot access to enough loans.

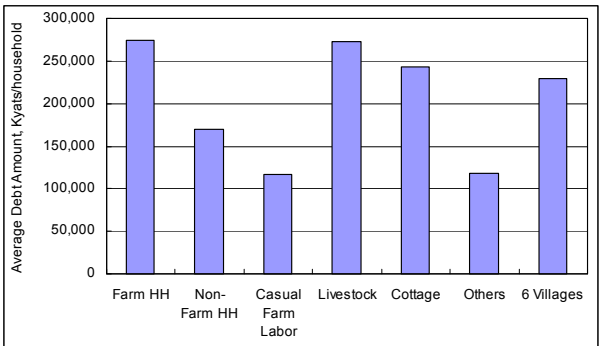


Figure 2.4.14 Average Debt Amount by Occupation

Figure 2.4.15 shows the percentage of debtors for farm household by village while Figure 2.4.16 depicts that of non-farm household. Average ratio for farm household debtors is 64% while that of non-farm household debtors is 58%, not much different between the 2 groups. The figures also show debtors by occasionally or regularly. One thing notified is there are less regular debtors in farm household than in non-farm household. This means that non-farm household cannot help borrowing money in most

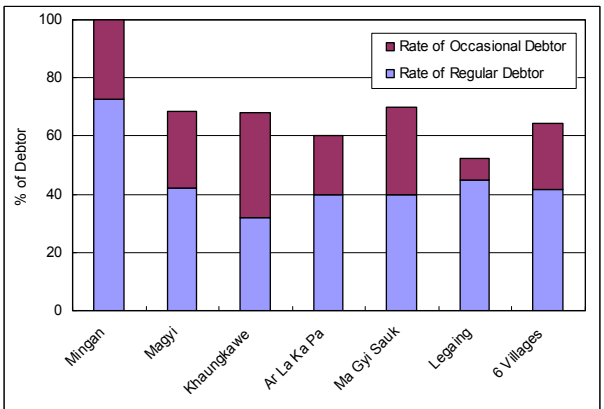


Figure 2.4.15 Ratio of Debtors for Farm HH

of the times.

Figure 2.4.17 and Figure 2.4.18 show the loan sources for farm household and for non-farm household respectively; namely, from whom they borrow money. They borrow money from colleague villagers being the most, followed by relatives, by outside lenders away from their village. Difference in 2 groups can be seen in the share of government as lender. Government as loan provider shares 13% for farm household while it shares only 3% for the non-farm household. One may see how difficult for the non-farm household to access government loan.

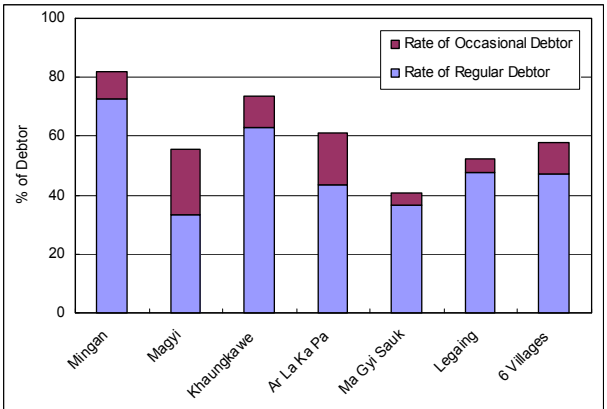


Figure 2.4.16 Ratio of Debtors for Non-Farm HH

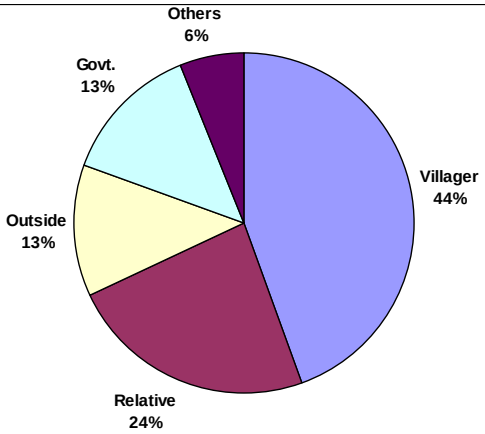


Figure 2.4.17 Loan Source (Lenders) for Farm HH

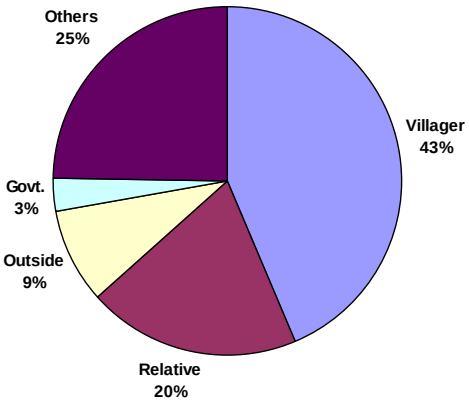


Figure 2.4.18 Loan Source (Lenders) for Non-Farm HH

Figures 2.4.19 and 2.4.20 explain for what purposes they had to borrow money. Figure 2.4.19 shows the purposes for farm household and Figure 2.4.20 for non-farm household. For farm household, what comes first is for agriculture input, followed by food. For non-farm household, agriculture purpose, of course, does not exist and food comes first for the reason why they had to borrow money. Borrowing money for education and medical purposes occupies considerable shares; 14% and 10% for farm household, and 14% and 14% for non-farm household.

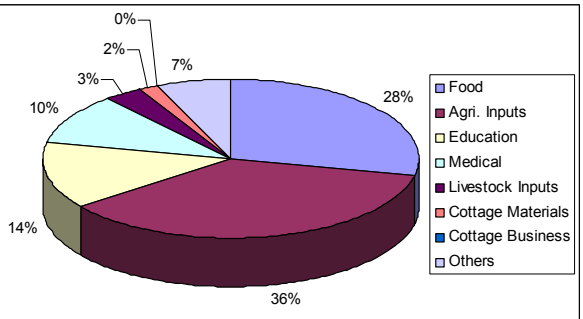


Figure 2.4.19 Reasons for the Debt for Farm HH

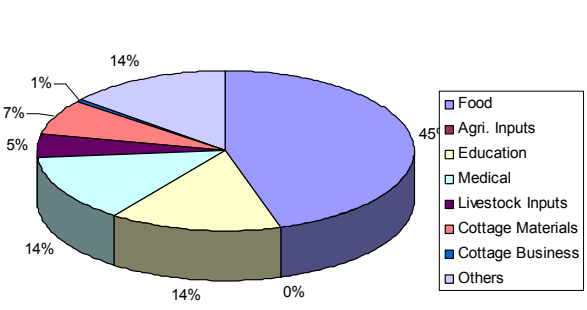


Figure 2.4.20 Reasons for the Debt for Non-Farm HH

2.4.7 Meat and Fish Consumption

Non-farm households are usually placed in poorer stratum than farm household as aforementioned. Of the non-farm households, those engaged in casual farm labor constitute of the poorest of the poor.

As an example of how they are poor, Table 2.4.5 shows the occasion that they consume meat. The table firstly shows by the categories of farm household and non-farm household, and out of the latter casual farm labor alone is listed at the bottom row. As seen from the table, casual farm labors responded that on average they consume meat about 3 - 4 times per month which is rarer as compared to farm households, about 7 times.

Table 2.4.6 shows the occasion of consuming fish in a same way as meat consumption. Though the difference amongst the strata is not much big like meat consumption, it can be said that fish consumption in farm household is more frequent than that of non-farm households and casual farm labors. Here, comparison between non-farm labor and casual farm labor shows that the latter, the casual farm labors, consumes fish a little more frequently than the former. This, however, does not necessarily mean that they buy fish more frequently because many of them just go to stream and catch fish themselves as found out from interviews by the Team.

Table 2.4.5 Occasion of Consuming Meat

Category	No. of Samples	times/month		
		Now	10 yrs ago	20 yrs ago
Farm Household	199	6.4	6.4	6.3
Non-Farm Household	162	5.0	5.7	6.3
Casual Farm Labor	55	3.7	4.4	4.1

Source: JICA Baseline Survey 2007

Table 2.4.6 Occasion of Consuming Fish

Category	No. of Samples	times/month		
		Now	10 yrs ago	20 yrs ago
Farm Household	217	8.8	9.0	9.0
Non-Farm Household	179	7.3	7.2	7.5
Casual Farm Labor	63	7.9	7.8	7.7

Source: JICA Baseline Survey 2007

2.4.8 Property Possession by Social Stratum

Figure 2.4.21 shows major properties owned by different category of the respondents as to what major income source they have such as farming, casual farm laboring, livestock raising, cottage, etc. As easily understood, casual farm labors do have very little property as compared to other households categorized by the major income source. They rarely have radio and TV, and bicycle to some extent say 36% as compared to over 60% for other categories' household, and no casual farm labor household has motorcycle. It may be noteworthy that farm households own those properties more than the others in most cases while casual farm labors have those the least.

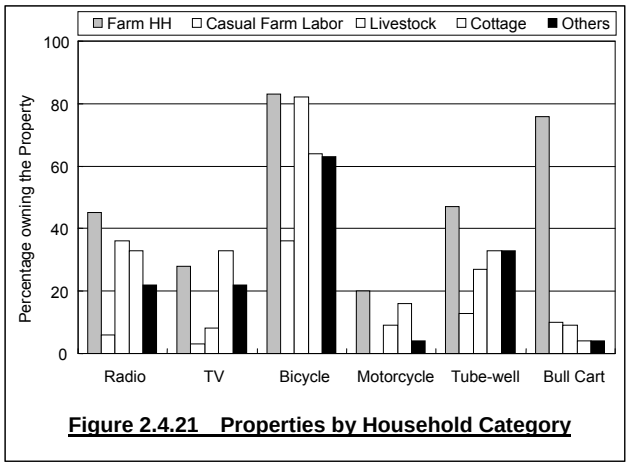


Figure 2.4.21 Properties by Household Category

2.4.9 Best Moment in Life

Figure 2.4.22 and Figure 2.4.23 summarize the responses to what was your best moment in your life for farm households and non-farm households respectively. What comes first for farm households is the novitiation for their son, followed by their own marriage, donation, 'not yet experienced', passing of university admission, etc. For non-farm households, on the other hand, 'not yet experienced' and their own marriage shared the top position, then followed by novitiation, the time when they had children, passing of university admission, donation, at bachelor age, etc.

A difference between the farm household and non-farm household may be seen in 'novitiation' and 'not yet experienced'. Though novitiation came first for farm households, it was positioned at 3rd place for non-farm household. 'Not yet experienced' for farm household was placed in 4th position while that of non-farm households in the top position. This may imply that since non-farm households are relatively poor as compared with their counterparts, farm-households, they may not have had such

occasion of novitiation which requires certain amount of money, and instead may have replied 'not yet experienced' at the first place.

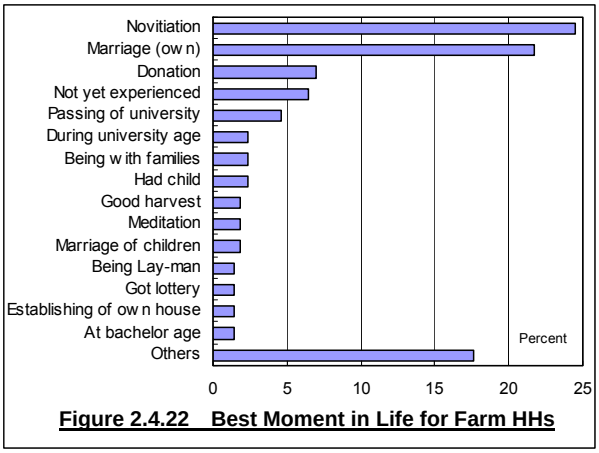


Figure 2.4.22 Best Moment in Life for Farm HHs

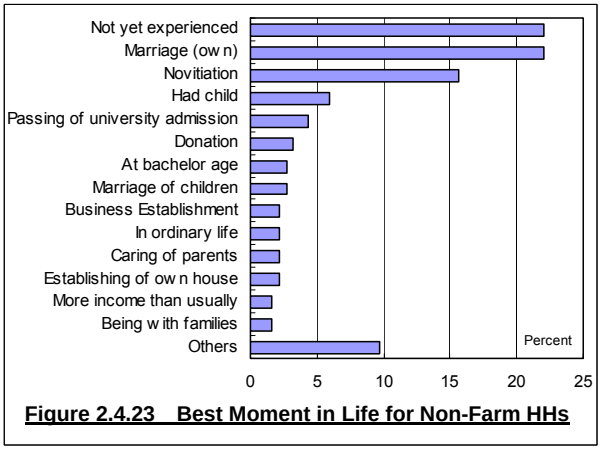


Figure 2.4.23 Best Moment in Life for Non-Farm HHs

2.4.10 Nutritional State of the Villagers estimated from BMI

In general, there is a relationship between low income and underweight in human body in many countries. BMI（Body Mass Index）was measured for the villagers of 6 pilot project villages in years of 2007 and 2008. Villager's height and weight in the samples were measured, and BMIs were estimated. The BMI measurement covered around 60% of the total village population.

BMI[1] is originally used for an index of adults. By this reason, it is necessary to employ other indices for younger strata positioned in between infants and children although the measurement itself was made for height and weight for obtaining a proper interpretation. In this Study, a normal BMI index is employed for adults, but the sub-standard samples are further sub-divided into starvation and underweight referring to CED (Chronic Energy Deficiency[2]).

Also, as to infants (3 - less than 6 months after birth) the same BMI is calculated for this age group but Kaup Index is employed in its interpretation that is different from ordinary BMI index. Further, as regards an age stratum in between infants and adults (boys and girls aged 6 - younger than 20), body masses are examined by "Hibi's[3] Standard Body Weight method" that is employed in the Ministry of Health Welfare and Labor in Japan. These 3 types of indices are summarized in the following table with body masses.

Table 2.4.7 Determination of Body Masses according to BMI Classes

Class		Starvation	Underweight	Standard	Overweight	Obese
Standard BMI	Over 20 yrs old	BMI<16.0	16.0 ≤BMI < 18.5	18.5 ≤BMI <25.0	25.0 ≤BMI < 30.0	30.0 ≤BMI
Class		**Too Thin**	**Thin**	**Normal**	**Fattish**	**Obese**
Hibi's method	Age; 6 to19	W < - 20%	-20% ≤W<-10%	-10%≤W<+10%	+10%≤W<+10%	+20%≤W
Kau index	Age: 5 to 5.9	BMI < 13	13 ≤BMI<14.5	14.5≤BMI<16.5	16.5≤BMI<18.5	18.5≤BMI
	Age: 4 to 4.9	BMI < 13	13 ≤BMI<14.5	14.5≤BMI<16.5	16.5≤BMI<18	18≤BMI
	Age: 3 to 3.9	BMI < 13.5	13.5 ≤BMI<14.5	14.5≤BMI<16.5	16.5≤BMI<18	18≤BMI
	Age: 2 to 2.9	BMI < 13.5	13.5 ≤BMI<15	15≤BMI<17	17≤BMI<18.5	18.5≤BMI
	Age: 1.5 to1.9	BMI < 14	14 ≤BMI<15	15≤BMI<17	17≤BMI<19	19≤BMI
	Age 1 to1.49	BMI < 14.5	14.5 ≤BMI<15.5	15.5≤BMI<17.5	17.5≤BMI<19.5	19.5≤BMI
	3months to < 1	BMI < 14.5	14.5 ≤BMI<16	16≤BMI<18	18≤BMI<20	20≤BMI

[1] United States Department of Agriculture, "Nutrition Insights", March 2000

[2] James WPT (1994): Introduction; the challenge of adult chronic energy deficiency European Journal of Clinical Nutrition, 48, S1- S9

[3] Itsuro Hibi, "Malnutrition and metabolic disturbance, Obesity, Current systematic research on pediatrics Vol. 4", pp.330-343(1968), Nakayama Books Publish

Where: Body Mass Index (BMI) = (Body weight in Kg unit) / (Body height in meter unit)^2

Determination by Nippi style = (Coefficient 1) x (height by cm unit)^3 + (Coefficient 2) x (height by cm unit)^2 + (Coefficient 3) x (height by cm) + (Coefficient 4)

Sex	Coefficient 1	Coefficient 2	Coefficient 3	Coefficient 4
Male	0.0000641424	-0.0182083	2.01339	-67.9488
Female	0.0000312278	-0.00517476	0.34215	1.66406

1) Result of BMI measured in 6 Target Villages

Figure 2.2.24 recapitulates mean BMI values by sex in 6 target villages of 2007 Pilot Project (in this case, as the data for infants and children are also taken into average as BMI values, it is not intended to use them as an indicator of determining whether the samples are fat or lean, but to utilize merely for the comparison among the villages).

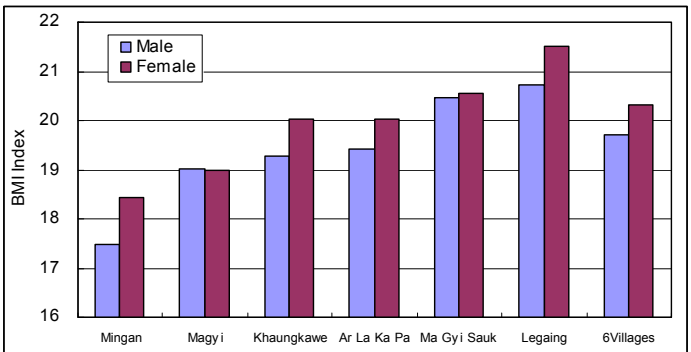


Figure 2.4.24 Mean BMI values by sex in 6 target villages

In this figure, both male and female give the same BMI value, or 19.0 in Magyi Village, but in other 5 villages male always gives lower BMI value than that of female. As the overall means among these 6 villages, BMI value for male gives 19.7, whereas that for female does 20.3 (equivalent to the difference by 1.5 kg on weight basis assuming that an average female is as tall as 160 cm).

Regarding BMI values by village, the figure shows difference from village to village. BMI values were 17.5 for male and 18.4 for female in Mingan Village located on Bago hill with the most rigorous natural conditions among the target villages, whereas they gave 20.7 for male and 21.5 for female respectively in Legaing Village bestowed with irrigated paddy tracts with favorable conditions for farm production. Assuming that the villager's height is averaged at 160 cm, there found the difference by 8.2 kg for male between these two villages, and by 7.9 kg for female between these two. This probably leads to a conclusion that natural as well as farm-producing conditions prevailing in a village cause variance in body masses of villagers.

Then, the difference observed in body masses are statistically significant or not is examined taking two examples, namely those sampled in Mingan Village and Legaing Village. Body masses in these two villages are compared for infants (age of 3 months to younger than 6 years old), for boys and girls (6 years old to younger than 20) and for adults (older than 20 years old). As for the criteria to judge body masses determining whether they are too lean or moderate, Kaup index is applied to the case of infants, deviation from the Hibi's standard weight to the case of boys and girls, and BMI classes considering CDE to the case of adults.

1.1) Result for Infants (age of 3 months - younger than 6 years old)

Figure 2.4.25 shows the result of measuring BMI for infant age (3 months after birth to younger than 6 years old) in Mingan Village and Legaing Village (expressed in %). The figure gives BMI values in these two villages side by side, where the left side of the pillar gives value for Mingan Village and the right side thereof does that of Legaing Village. As evident from these comparisons, values of Mingan Village given at the left side show higher rate of the persons judged as Normal (at the center of the figure) to Too thin (at the left thereof).

Inversely in a good contrast to this village, more percentage of villagers are counted falling in the classes from the Normal (at the center) to fat/ obese (at the right) in Legaing Village, where it is notable that the value of the most frequent appearance stays at Obese. The statistical significance of these data was tested at a chi-square test that gave its significance at the 1% error level, thus it could be deduced that the values of BMI and the conditions in these two villages were significantly correlated. That is, it can statistically be proved that infants with the age from 3 months after birth to 5 years old in Mingan Village tend to have different body masses (namely; tendency of lighter weight) from those in Legaing Village.

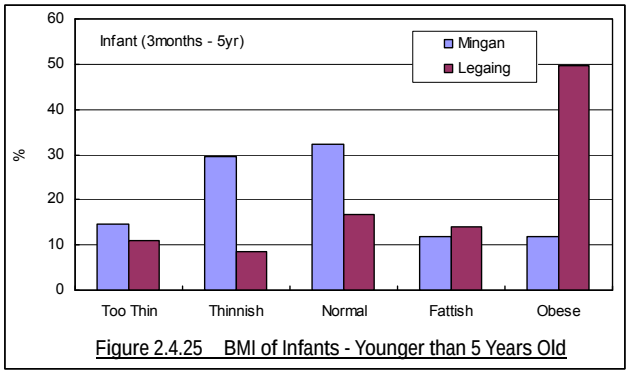


Figure 2.4.25 BMI of Infants - Younger than 5 Years Old

1.2) Result for Boys and Girls (age of 6 years old - younger than 20 years old)

Figure 2.4.26 shows distribution of BMI for boys and girls of elder than 6 years old but younger than 20 years old in both Mingan Village and Legaing Village. In both of these villages, the figure shows that the most frequently observed BMI values are concentrated at the Normal class or at the center of histogram, and the distribution pattern for the samples of Mingan Village is biased to the left half or at Thinnish side, whereas those of Legaing Village are more concentrated in the right half or Fattish side.

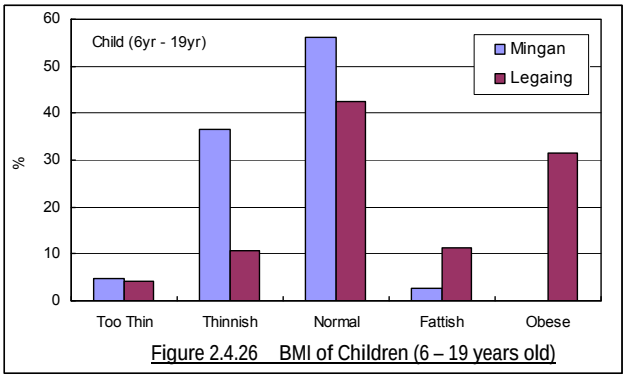


Figure 2.4.26 BMI of Children (6 – 19 years old)

A chi-square test of this distribution pattern also gave significant result at 1% error level, identifying the correlation between the conditions and BMI values in these two villages. In other words, the samples of boys and girls ranging their age from 6 to 20 years old collected in Mingan Village are statistically different from those collected in Legaing Village.

1.3) Result of Adults（elder than 20 years old）

Similar to the above-mentioned cases, calculation of BMI was made for adults aged elder than 20 years old to compare their degree of fatness and leanness, or Fattish-Thinnish for both Mingan Village and Legaing Village. The result is illustrated in Figure 2.4.27. It can be observed in this figure that the distribution pattern for Mingan Village gives a bias toward the left or Thinnish side as seen in the cases of infants and children in this village.

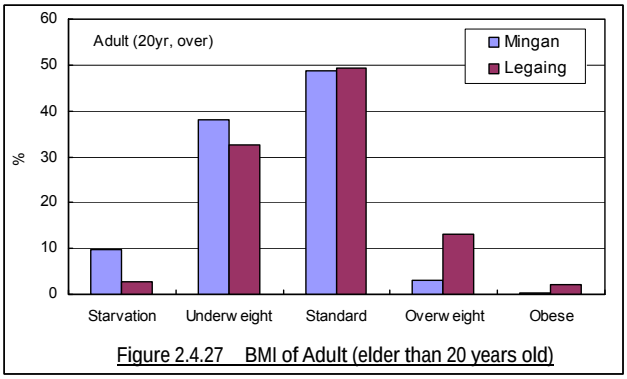


Figure 2.4.27 BMI of Adult (elder than 20 years old)

Even the distribution pattern of Legaing Village show a tendency toward Thinnish side similar to that of Mingan Village (namely, distribution patterns of infants and boys/girls in Legaing Village tends to give higher rate at the right or Obese side, but in the case of adults in the same village less rate of Obese is observed for adults, thus approaching to the frequency distribution of Mingan Village).

Nevertheless, adults in Legaing Village have less rate of underweight than those in Mingan Village, and also the bias towards higher rate of overweight, in other words a tendency that BMI values of adults of Legaing Village than those of Mingan Village is also visible in this figure.

These data are also tested with a chi-square test as stated in above two examples, and the test proved significance of the difference at 1 % error level, thus the values of BMI and the conditions prevailed in these two villages are judged as being significantly correlated. Namely, it can statistically be proved that adults in Mingan Village have a different tendency (tendency of having lighter weight) from that of adults in Legaing Village.

2) Comparison of the Results of BMI Measurements by Social Stratum

Farm and non-farm households exist in rural areas in the Study Area. It is already known that the poverty rate of the latter is higher in this social hierarchy. For instance, according to the result of the baseline survey carried out in the target 6 villages of 2007 Pilot Project, poverty rates of the former and the latter indicate 33% and 67%, respectively. Likewise, the latter includes farm laborers' households known as the poorest stratum in social hierarchy. The poverty ratio of these farm laborers' households reaches even 75%. The following will examine what influence the difference of social strata in terms of poverty gives to body masses or Fattish- Thinnish.

Table 2.4.8 shows the result of the chi-square test by infant, boy/girl and adult on the difference in BMI values or Fattish-Thinnish relationship between these two social strata, subdividing the total samples surveyed into farm and non-farm households. Likewise it shows the result of the chi-square test on the BMI difference by such groups of farm households, the richest social group, and farm labors households, the poorest social group.

Table 2.4.8 indicates that the difference between BMI of farm households and of non-farm ones is not significant for any groups of infant, boy/girl or adult. This is because that the probability without significance as a result of chi-square tests stands at 51%, 8% and 26% respectively. The probability without significance derived from chi-square tests between farm households and farm laborers' ones gives 19%, 1.3% and 1.1% for infant, boy/girl and adult, respectively (see the bottom row of the Table 2.4.8).

Table 2.4.8 Result of chi-square test on BMI among social strata (tested by infant, boy/girl and adult)

Sample class	Infant (3 months - 5 years old)	Boy / girl (6 - 19years old)	Adult (elder than 20 years old)
Farm Households	No significant difference	No significant difference	No significant difference
Non-farm HHs	(51.1%), (N=524)	(8.00%), (N=1,973)	(26.2%), (N=5,903)
Farm Households	No significant difference	Significance at 1% level not found	Significance at 1% level not found
Farm Laborers' HHs	(19.0%), (N=435)	(1.31%), (N=1,717)	(1.11%), (N=5,213)
Mingan Village	Significance at 1% level is found	Significance at 1% level is found	Significance at 1% level is found
Legaing Village	(0.01%), (N=207)	(0.00%), (N=730)	(0.00%), (N=1,869)

Source：JICA Study Team based on BMI measurement done in 2007 and 2008.

From these results of the tests it can be said that no significant difference is found in the comparison of BMI of infant between two groups, farm and farm laborers' households. With regard to BMI of boy/girl and of adult, the significant difference can be recognized at 5% error level (or the probability of incidence at 95% level) though it is not significant at 1% error level (or occurring probability of 99%).

In this connection, comparison of BMI of farm households with farm laborers' ones by infant, boy/girl and adult are presented in Figure 2.4.28 – Figure 2.4.30, respectively. Figure 2.4.29 gives the comparison of BMI for boy/girl group in these two social strata. There is one thing to notify; though there appears significance at 5% error level in boys/girls between farm and farm labor' households, higher BMI appeared in the poorer group that is the boys and girls in farm labors' household (In case

of adult, the tendency is however as is expected, that is higher BMI appeared in the farm household group).

Villager's dietetic life style has some bearing on this similarity of BMI. People assimilate 67% of their caloric requirement from rice in term of standard food basket, while rice has been regulated as the top priority food item in Myanmar and it has been dealt as a contraband even if surplus happens, thus leading to a state of domestic abundance.

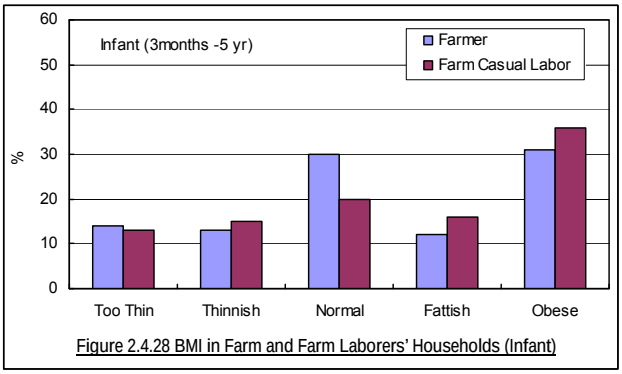


Figure 2.4.28 BMI in Farm and Farm Laborers' Households (Infant)

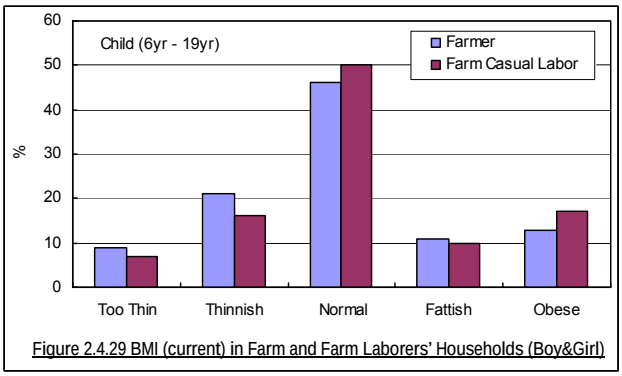


Figure 2.4.29 BMI (current) in Farm and Farm Laborers' Households (Boy&Girl)

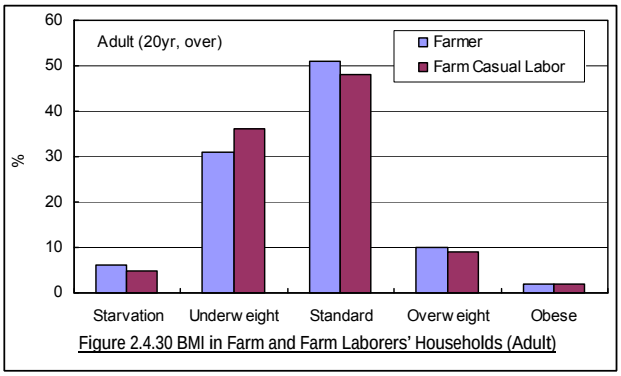


Figure 2.4.30 BMI in Farm and Farm Laborers' Households (Adult)

It is conceivable from that fact that people including those who are ranked as poorest stratum assimilate most of their caloric requirement from cheap rice. Although dietetic contents may be different between wealthy farm households and the poorest farm laborer ones as is shown in the frequency of eating meats, it can be deduced that no statistically significant difference exists supporting that body masses of the members of farm laborer households, or the poorest stratum, tend to be extremely thinnish as compared to those of farm households as far as the data is concerned to our 6 pilot villages.

2.4.11 State of Water Supply and Hygiene

The state of sources of domestic water supply and of hygiene in household latrines were also surveyed in the baseline survey conducted in 6 target villages of the 2007 pilot project (effective samples collected from 419 households). Similarly, a survey centered on village water supply was conducted in 3 TS including Chauk TS where Mingan Village, one of the target villages of the Pilot Project 2007 is located and adjacent 2 other TSs, i.e. Nyaung-U TS and Kyaukpadaung TS, as a survey for the Water Supply Project by JICA in the CDZ. The following summarizes the outline of the state of water supply and hygiene in the target villages of the Pilot Project and these 3 TSs included in these surveys.

1) Water Sources

Figure 2.4.31 summarizes sources for water supply in 6 target villages in the Pilot Project 2007. In terms of the total of these 6 villages, users of artesian wells represent 15% as shown in the bottom of histogram, those of privately owned tube-wells do 30%, those using their neighbors tube-wells do 46%, those utilizing

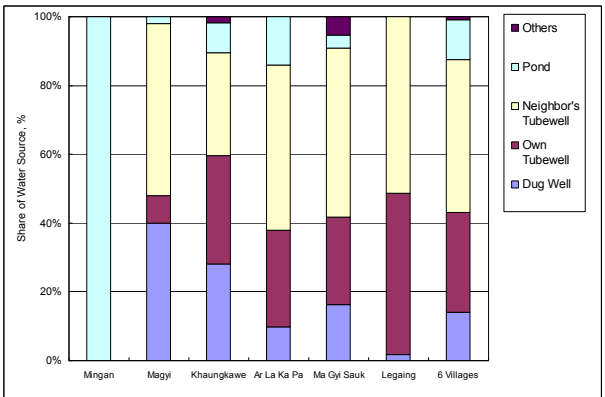


Figure 2.4.31 Rates of Water Source Composition

reservoirs do 12% and others who use other water sources such as streams do 1% of the total sources.

Tube-wells have lowest risk of microbial contamination, and 76% of the villagers utilize their own tube-wells (30%) and those of their neighbors (46%). The rate of utilizing tube-wells for domestic water sources reaches the highest in Legaing Village (98%), followed by Ar La Ka Pa Village (78%) and Ma Gyi Sauk Village (77%). On the other hand, users of tube-wells are very few in Magyi Village (8%) and all the villagers rely their domestic water on reservoirs in Mingan Village, thus there found a great variability among villages.

Mingan Village is located in Chauk TS where the most rigorous natural conditions in the CDZ govern as the area is often called "heart of dry zone". A Technical Cooperation Project by JICA for domestic water supply has been carried out in Chauk TS and two others, namely Nyaung-U TS and Kyaukpadaung TS, aiming at increasing rate of covering water supply in rural area. A thick layer of sandstone widely develops in these areas, characterized with deep groundwater level in this aquifer （where groundwater usually stays at the level lower than 150 - 200m below the ground level）.

Therefore, it is impossible to use groundwater by means of traditional manual digging skill (ways of boring wells by the use of bamboo/shovels) in these areas. As a result, the villagers in many villages where deep wells have not been drilled through the assistance of donors or the Government cannot but rely their domestic water sources on the reservoirs constructed in Dynasty era. Figure 2.4.32 refers to the result of a survey by the technical cooperation project for water supply concerning domestic water sources in 60 villages in total distributed in these 3 TSs. The figure reveals that the rates of households in the surveyed villages using reservoirs for their source of domestic water supply come to 46% in Nyaung-U TS, 45% in Kyaukpadaung TS and 50% in Chauk TS.

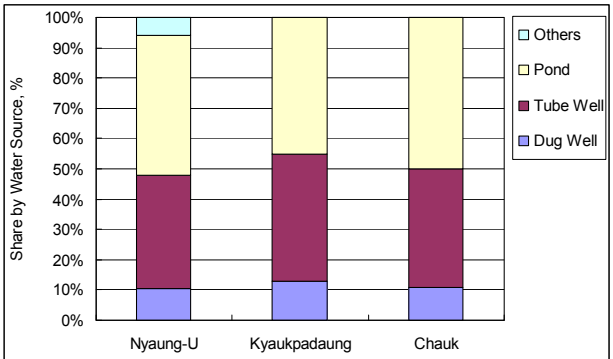


Figure 2.4.32 Rate of Water Sources in 3TSs

In almost all the cases, women (wives and daughters) fetch water in the case of utilizing their own wells or those of their neighbors, but in the villages where reservoirs are utilized different cases are observed. Villages usually tend to be located at higher elevation places, whereas reservoirs have been constructed at low sites with lower elevation for the convenience of collecting water. This makes the location of reservoirs far from villages. In the case of Mingan Village, the reservoir is only 1km distant from the village, but according to the result of the above-cited survey, there is a village where the reservoir is as far as 6km from the village of its users.

Figure 2.4.33 refers to a result of the above-cited survey showing the relationship between household's ranks of wealth degree and those who fetch water by sex. It shows that male in many cases fetch water in wealthy and moderate households, whereas a reversed tendency is observed in poor stratum where female are more engaged in water fetching than male.

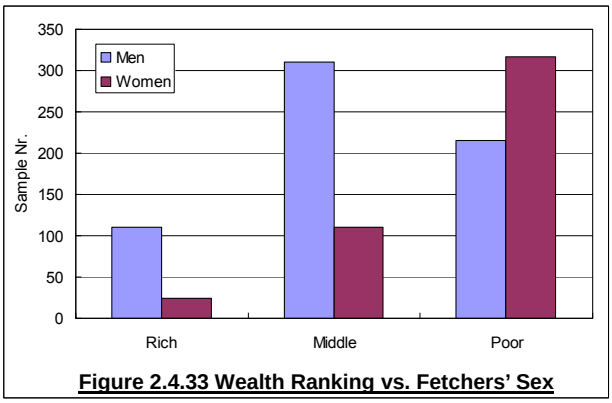


Figure 2.4.33 Wealth Ranking vs. Fetchers' Sex

Since wealthy or moderate villagers use oxen carts to fetch water, in many cases male undertakes water fetching who drive carts. In these cases, male member of non-farm households

employed by wealthy villagers sometimes undertakes water fetching as wage labor (as a result of inquiry survey in Mingan Village). On the other hand, most of poor households do not own oxen carts. By this reason, female may more often fetch water because male prefers to get engaged in wage labor or day-to-day casual labor for the sake of earning income rather to do water fetching at home though he sometimes fetch water for his family on his shoulder with a yoke bar. Anyway, reservoirs are in many cases located far from villages, so water fetching with a yoke bar is really a hard work. It seems that the poorer a household is, the heavier burden its female member might have to bear.

2) Hygienic Facility (State of Latrine)

Figure 2.4.34 indicates the state of latrines in 6 villages by their type. The types/ structures applied to latrines include: open-air evacuation, use of nearby latrines owned by the neighbors (in many cases owned by their relatives), traditional pit latrine (with underground night soil tanks) and improved latrine (conventional water closet but without ventilating pipes). The figure shows that many households have their own latrines or improved ones though some use open field and their neighbors' latrines. As a whole, use of open field accounts for 8%, use of their neighbors' latrines does for 11%, use of traditional latrines for 3% and the rate of owning their own improved lavatories has reached 79%.

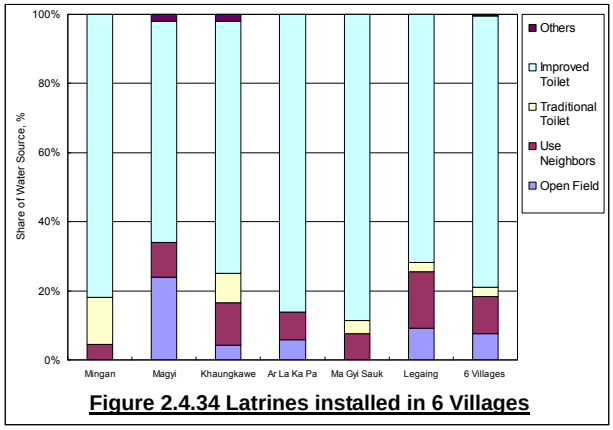


Figure 2.4.34 Latrines installed in 6 Villages

Possibly owing to the high rate of installing latrines and also to the activities of sub rural health centers (under a rural health center) established as densely as one in 4 - 8 villages or so, morbidity cases with water-borne diseases like dysentery have remained at very low level. Table 2.4.9 summarizes the result of a questionnaire on the incidence of dysentery for the past 2 weeks before the date of the survey covering 419 households in total targeted for the baseline survey. These 419 households consist of 2,159 members but only 12 cases of dysentery took place during two weeks before the date of the survey, consisting of 3 husbands, 3 wives, 1 parent and 5 children.

Table 2.4.9 Number of Dysentery Cases Reported (during 2 weeks antecedent to the date of the survey)

Number of persons suffered from dysentery	Husband	Wife	Parent	Child	Others	Total
Number of samples	377	375	97	1,057	253	2,159
Number of persons	3	3	1	5	0	12

Source : JICA Study Team

Table 2.4.10 indicates the rate per population of morbidity cases reported in 2006 under such major water-borne diseases as dysentery, typhoid, malaria etc in the jurisdiction of the Rural Health Centre (controlling about 1 - 8 sub rural health centers) including the target villages of 2007 Pilot Project in its service area. These figures listed in this table do not necessarily include all the morbidity cases occurred at the household level because some patients have not visited the centre for diagnosis and treatment especially in the cases of casual, not serious dysentery or loose bowel.

In any case, the table reveals that annual incidence rates of morbidity cases with dysentery per population stand at 0.3%, with typhoid at 0.27% and malaria at 0.09%. The health index of the population in the CDZ, in broader sense that of Burmese, has relatively been favorable, and this is also reflected in the data of the baseline survey conducted in the target villages of 2007 Pilot Project and of the Rural Health Center servicing these target villages.

Table 2.4.10 Number of Morbidity cases with Water-borne Diseases (in 2006) reported in the RHS

Village	Township	Villages Covered	Population Covered	Morbidity Case			Morbidity % ag/ Population		
				Diarrhea	Dysentery	Malaria	Diarrhea	Dysentery	Malaria
Mingan	Chauk	31	27,662	70	39	2	0.25	0.14	0.01
Magyi	Ngazun	34	19,254	156	150	46	0.81	0.78	0.24
Khaungkawe	Tada-U	4	6,047	20	25	0	0.33	0.41	0.00
Ar La Ka Pa	Myinmu	20	37,757	15	63	0	0.04	0.17	0.00
Ma Gyi Sauk	Ayadaw	23	28,112	67	45	42	0.24	0.16	0.15
Legaing	Pwintbyu	35	24,349	103	67	35	0.42	0.28	0.14
Total, %		82	143,181	431	389	125	**0.30**	**0.27**	**0.09**

Source : JICA Study Team

2.5 People's Perception about Poor and Rich by PRA and Group Interviews

This sub-section refers to the PRA workshop results carried out at 17 villages scattered in CDZ in 2006/07, and also to focus group interviews done in 6 target villages for the pilot project implemented in 2007/08. Based on these surveys, people's perception about poor – wealthy stratum together with the share in percentage as well as the trend are presented below:

2.5.1 People's Perception about Poor and Rich and Its Share

PRA workshops identified the villagers' perception about social stratum such as poor, middle and rich households according to their living context. Tables 2.5.1, 2.5.2 and 2.5.3 summarize the villagers' perception by stratum, and Figure 2.5.1 shows the share in percentage by stratum. Pointed out are as followed:

1) Top 3 concerns about their perception of poor-rich are; 1) family size, 2) possession of farm land, and 3) how the house looks like or what materials are used for the houses, with little difference in terms of magnitude amongst those 3 items.

2) Villagers are very much concerned about the family size, in cases plus number of dependants, in connection with their poor-rich household perception. They think that the larger the family size is, the poorer the family is and vice versa.

3) Possession of farm land defines their perception about poor-rich household, as may be expected. They think that poor households do not possess farm land, middle stratum possess small farms probably with a pair of draft cattle, and rich villagers have large farms with enough draft cattle and also farm implement. Some of them manage even rice mill, stores, etc.

4) House condition is a very simple indicator to which stratum the household belongs by just observation. Poor households are said to build thatched/bamboo matted houses or with palm leaves, rich household can build a house with iron roof, and/or with wood or brick walling.

5) Following the top 3 indicators above, villagers think such indicators are also important in defining social stratum as; indebtedness and loan accessibility, availability of staple food throughout a year, children's education/schooling, social contribution, clothing, sickness among the family members and its affordability for the medical expenses, etc. To what extend villagers can do 'social contribution' is one of the indicators they think, which may be deeply-rooted in their religious belief.

6) Perceptive share of the stratum by poor-middle-rich varies widely by village as shown in Figure 2.5.1. However, in most of the villages what shares the most is poor stratum ranging from 26% to as much as 84 % with the average of 62%.

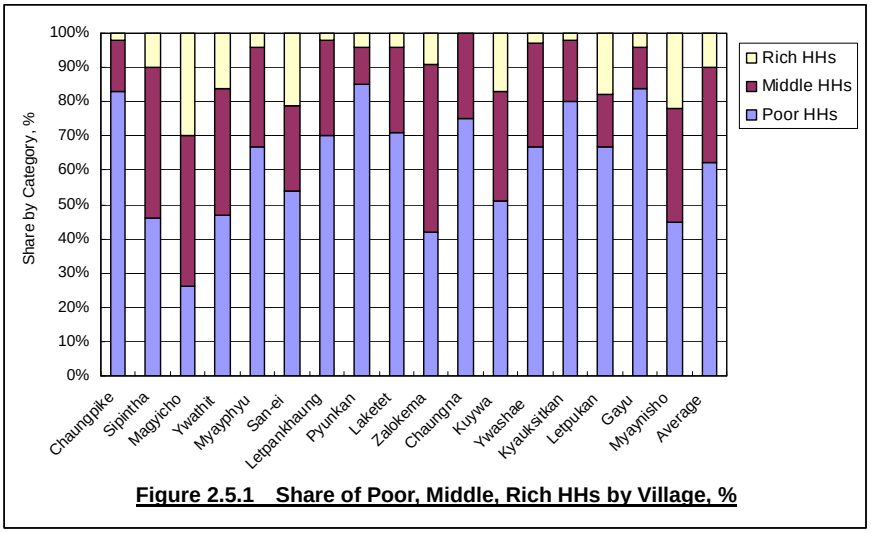


Figure 2.5.1 Share of Poor, Middle, Rich HHs by Village, %

Table 2.5.1 Villagers Perception about Poor Household by PRA at 17 Villages

No.	Perception for Poor Household	Village
1.	Big family (high dependent members), many children	17
2.	Landless household, or marginal land holder	16
3.	Poor housing condition, thatched/bamboo matted houses, or with palm leaves	14
4.	Children out of school, poor schooling among children, and/or in work	14
5.	Indebtedness is high, and not able to repay	13
6.	Very hard to cope with social money contribution	13
7.	Poor clothing, and buy in a very few cases	12
8.	Family (working age) members poor in health and cannot afford to take treatment	12
9.	Lack of staple food, food sufficiency is very low	12
10.	No working assets including cattle, no farm assets	6
11.	No access to loan	3
12.	Single headed household	2
13.	Low education in family members	2
14.	No regular income	1
15.	Spending is low	1

Table 2.5.2 Villagers Perception about Middle Household by PRA at 17 Villages

No.	Perception for Middle Household	Village
1.	Medium family and not too many children, mostly nuclear family	17
2.	Owned small farms and/or 1 or 2 (or a pair of) draft cattle	17
3.	Build moderate/ good housing, with thatched/bamboo/wood, including sanitation	15
4.	Low in debt, moderate access to loan, but may not be easy for some households	14
5.	Children in school but poor schooling, occasionally out of school	13
6.	Children in work but occasionally, seldom work in farm	12
7.	Sufficient in staple food, 3 times a day, throughout a year	12
8.	Low or small number of dependent population in a family	12
9.	Can cope with social money contribution, or occasionally can do it	12
10.	Can spend 2-3 times a year on clothing, fairly good clothing	11
11.	No severe health members in working age and can afford expense for medical care	10
12.	Regular income is available from any of family members	1
13.	Single household but not with so harsh work	1
14.	Has working assets just enough to work	1
15.	Average education in family members	1
16.	Enough working members in the family	1

Table 2.5.3 Villagers Perception about Rich Household by PRA at 17 Villages

No.	Perception for Well-off Household	Village
1.	Small or medium family, with less children, or nuclear family	16
2.	Owns large farm and having draft cattle, farm implement (and some small livestock)	16
3.	Good-house, iron roofed with wood or brick walling	16
4.	Low or no debt, good access to loan, able to repay due loans and timely	15
5.	Can contribute more or highest among the social strata for donations and contributions	14
6.	Sufficient in staple food plus other foods throughout the year	13
7.	Wearing good clothing , and regular spending on clothing and apparels,	12
8.	Children in school and with good schooling	12
9.	No children in work or out of school either	11
10.	Very low or low dependent population in the family	11
11.	No severe health members in working age, can afford expense for medical care	11
12.	Most with regular income, good income	2
13.	Spending are high, can meet necessary expenditure	2
14.	High education in family members	1
15.	No problem in employing laborers even if no working members in the family	1
16.	No need to do harsh work at all	1

2.5.2 People's Perception about Poor and Rich by Livelihood and Its Trend

In the 6 target villages for pilot project implemented in 2007/08, focus group discussions were done by their major livelihood such as agriculture, livestock and cottage industry, which are the most common major income sources in the CDZ. Discussions identified their perception about poor-rich and also trend of the poor-rich share in their villages. Following summarizes the perception and its trend of poor-middle-rich by livelihood group:

1) Agriculture Group

Farmers' perception about poor-rich centers on how much acreage of farmland he/she owns in general. Though the minimum acreage to maintain a family very much depends on the condition where his/her farmland is located, it may be said that the minimum level of farmland is about 5 acres, namely those farm households who own only 5 acres or less than that automatically fall in poor stratum. On the other hand, farm households who own farmland over 5 acres and draft cattle perceive their living standard being middle. Farm households owning rice mill, commercialized piggery and shops in addition to the farmland and draft cattle perceive their farm economy being better-off.

One thing very particular to the above 5 acres, which is the minimum level of maintaining a family, is the big variation in its range. An example is shown in the following table, which depicts the big variation. In fact, farmers in Mingan village indicated they needed as much as 20 acres to maintain their households, followed by 8 acres claimed by Magyi villagers. Mingan village is located in Bago Hills reach which presents the severest climatic condition amongst the 6 target villages, and Magyi village follows. Farmers in Legaing village stated they need minimum of 3 – 5 acres which is the minimum range amongst the 6 villages. Legaing village is endowed with irrigated paddy farmlands, thereby giving the smallest acreage to maintain family.

Table 2.5.4 Agronomic Character and Minimum Farm Size to Maintain Household by Village

Village	Agronomic character	Cropping season per year (season)	Farm size to maintain HH (acre)
Mingan	Rainfed upland	2	20
Magyi	Rainfed upland	2	8
Khaungkawe	Rainfed upland	3	5
Ar La Ka Pa	Rainfed upland	3	5
Ma Gyi Sauk	Irrigated paddy rainfed upland	3	Paddy 5, Upland 8
Lagaing	Irrigated paddy rainfed upland	3	3～5

Source: JICA Study Team's Interview, 2006 - 2007

As expected, climatic condition fluctuates widely in the CDZ, affecting crop production very much. Following table summarizes questionnaire results asking harvest in the last 10 years; how many years you have faced almost nothing, worse, average and better in harvest. Here numerical indication is that almost nothing harvest is less than 20% of that of average year, worse is between 20 and 80%, average means just between 80 % and 120%, and better means over 120% as compared to the average year's harvest.

Table 2.5.5 Harvest Situation in the Last 10 Years (1997 – 2006) by Village

Village	No. of Sample	Almost nothing (Less than 20%)	Worse (20-80%)	Average (80-120%)	Better (Over 120%)	Total Year
Mingan	12	1.7	2.0	4.2	2.1	10
Magyi	38	1.2	2.4	4.3	2.1	10
Khaungkawe	26	1.7	2.7	3.3	2.4	10
Ar La Ka Pa	68	1.6	2.3	3.9	2.2	10
Ma Gyi Sauk	29	1.3	2.5	3.7	2.5	10
Legaing	37	0.8	2.4	4.3	2.5	10
Average, Total	210	1.4	2.3	3.9	2.3	10
Average, Total	210	3.7		3.9	2.3	10

Source: JICA Study Team's Questionnaire Survey, 2007

Above table clearly shows farmers in the 6 villages have experienced big reduction of harvest as; about 1.4 years in the last 10 years for almost nothing of harvest as average of the 6 villages, 2.4 years for worse harvest, totalling to 3.7 years for less harvest than the average. On one hand, there were 2.3 years that the farmers could get better harvest in the last 10 years. However, this better means just over 120% than the average harvest, not reaching to over 150% in most of the years.

Given above fluctuation, farmers say their livelihood has been fluctuating and it is very difficult to say for them the trend in either way, getting better or getting worse. However, there are some farmers saying climatic condition has been getting worse as:

1) U KH in Ar La Ka Pa village said soils and climate have been deteriorating year by year. In fact Yar lands have very much got worse since 7 years ago as far as he can remember.

2) U TH said rainfalls are scarce and instable as compared to the past, and especially paddy is nothing but worse nowadays.

3) U KT in Ma Gyi Sauk village said there are a lot of farmlands which have changed from Le to Yar. Climate has been getting worse and worse, especially the rainfall, as compared to the past, and on top of that, harmful insects have been increasing.

2) Livestock Group

Villagers belonging to this group are composed of farm households and landless households. Since farmers need at least one pair of draft cattle for cultivation they raise draft cattle and female cows for the reproduction of draft cattle if not all. However, there exist farm households who do not have any draft cattle due to small farm size, in most cases less than 5 acres. On the other hand, sheep and goats have been reared mainly amongst landless people. These small ruminants are tolerant to dry climate of the CDZ, and can be reared by those people not holding farmland.

People's perception about "poor and rich" varies depending upon village economy (availability of cottage industry), land use (paddy and upland), availability of farmland (cultivation right), and how many she/he owns livestock, etc. Livestock is in fact a supplementary livelihood to agriculture in most cases. Therefore, size of livestock she/ he owns cannot exclusively define their perception about poor-rich. The perception should be understood in relation to how much she/ he owns farm land, draft cattle, etc. in addition to how much livestock she/ he owns.

In general, farmers owning draft cattle fall in middle stratum. Further, those farm households who own commercialized piggery in addition to draft cattle may be categorized as better-off farmers. Then, landless people who raise mainly sheep and goats[1] perceive their household economy being worse-off, which is attributable to large family size, limited and seasonal employment opportunities for farm work, increasing of living expenses especially for rice price and cooking oil, education cost, medical expenses, etc. Most of this stratum are in debt and tend to fall deeper into debt.

Following table shows results of the interviews to livestock owners concerning the trend about rich-poor, which was done in the 6 target villages. Noted is that though the interview was made to livestock owners, this does not necessarily mean only to those who do not own other income sources such as farming and cottage. Therefore the trend shown below indicates interviewees' overall economic trend over past years inclusive of not only the income from livestock but also from other sources.

In Mingan and Magyi villages, there are livestock owners who stated the situation has been getting

[1] According to a PRA survey covering 170 HHs in 2006, it was found that only 17% of the landless households were rearing goat and/ or sheep.

worse, say 4 out of 10 interviewees in Mingan and 3 out of 9 interviewees in Magyi. Apart from these people, many other interviewees have replied their economic situation has been getting better. This may be because of; interviewees engaged also in farming said to have been getting more opportunities to sell their products as compared to Socialism era, and villagers engaged also in cottage industry said there were more materials as compared to the past. Therefore, it may be difficult to say the trend exclusively on livestock income but in general it may not be getting worse.

Table 2.5.6 Trend of Poverty for Livestock Owners

Village	Getting better	Getting worse	No change	Remark
Mingan	-	4/10	6/10	Paddy
Magyi	6/9	3/9	-	Upland + Industry
Khaungkawe	11/11	-	-	Suburban agriculture
Ar La Ka Pa	5/5	-	-	Upland
Ma Gyi Sauk	5/10	-	5/10	Upland +Ind.
Legaing	4/5	-	1/4	Upland

Source; JICA Study Team' Interview, 2007

3) Cottage Industry Group

Almost all the villages in the CDZ have at least some cottage industries such as weaving, tinsmith, sewing, knitting, sandstone processing, agro-based industry like rice mill, carpentry, plastering, etc. In all the 6 villages targeted for pilot project implementation in 2007/08, we can see some of these cottage industries. A series of group interviews were carried out to those who are engaged in cottage industry in each village, asking their perception about poor-rich and its trend. The results are summarized in the following Table 2.5.7:

Table 2.5.7 Villagers' Definition of Poverty and Poverty Trend of the Villages

Village		Better-off (%)	Middle (%)	Worse-off (%)
Mingan	Present	10	30	60
	10 yrs ago	5	20	75
	Definition	Farmers with more than 25 acre of agri. land, or sellers of sandstone products with enough incomes for the activities	Farmers with 10 to 25 ac. of agri. land, or mainly vendors of sandstone products with enough incomes for meals	Low incomes, mainly masons, need to work for meals and repayment of debts
Magyi	Present	10	30	60
	Past	-	-	-
	Definition	Enough incomes to meet living expenses, and still have extra	Just enough incomes to meet living expenses	Low incomes, need to work for meals and repayment of debts
Khaungkawe	Present	20	20	60
	30 yrs ago	4	9	87
	Definition	Farmers with more than 20 acre of agri. land (15%), or those engaged in cottage sector (5%)	-	Landless, daily labor, low incomes
Ar La Ka Pa	Present	20	30	50
	20yrs ago	0	50	50
	Definition	Enough meals and clothes, no debts	Enough meals and clothes, seasonal debts for the activities	Low incomes, insufficient meals and clothes, constant debts
Ma Gyi Sauk	Present	16	32	52
	Past	-	-	-
	Definition	Enough incomes for the activities and living expenses	Multiple income sources, occasional debts for the activities	Daily labor, constant debts
Legaing	Present	15	40	45
	15yrs ago	10	30	60
	Definition	Monthly incomes with more than 100,000 Kyats (farmers with more than 10 acre of paddy lands, rice millers, transporters with pickup trucks or buses)	Monthly incomes with 60,000 to 90,000 Kyats (farmers with 3 to 10 ac. of paddy lands, govt. staff, those engaged in cottage industries)	Monthly incomes with less than 60,000 Kyats (daily labor for agri.)

Source: JICA Study Team's Group Interview, 2007

The cottage industry in Mingan village is only sandstone-related covering from quarry, masonry to marketing. The majority of the households are engaged in quarry and masonry, and some in its trading and vending. The number of those households has been increasing because of the demand and price hikes of sandstone products, and accordingly the proportions of the villagers in the better-off and middle classes have been gradually expanding.

Nevertheless, there are some villagers in Mingan who became masons since they lost agricultural land because of defaults, or who became independent from the parents because of marriages and became landless. The villagers are generally in debts constantly if they have only income source from masonry, and fall into the worse-off class. If they have multiple income sources, however, they classify themselves in the middle regardless of the debts.

The characteristics of Magyi village are; 1) many villagers migrate for wage work, and 2) jaggery production and weaving have been active since long time ago, to supplement low incomes from agriculture. Those engaged in jaggery production and sales are mostly farmers. In general, while the income share from agriculture occupies largest in their household incomes, the one from jaggery is also significant. Those engaged in jaggery production and weaving feel that the profitability of their businesses has been deteriorating, by the inflation and price hike of raw materials. The villagers see poverty based on the extents to which their incomes can meet their living needs.

The business environments for the three main cottage industries in Khaungkawe are as follows: The buckets and container boxes from tin smith industry as well as the student bags from weaving industry have been receiving good demands, and therefore both businesses are getting better than the past. On the other hand, the sales in guitar key production have been stunted due to its weak competitiveness against the imported ones from China. It can be said that the economic condition of the village as a whole has been favored by the expansion of tin smith and weaving.

Ar La Ka Pa village heavily relies on agriculture as its income source. One can see the village's main cottage industries only in leather slipper making and condensed milk manufacturing, in each of which a few households are engaged. Both industries have been increasing the productions as well as profits due to demand hikes. The economic situations of the whole village have been better as indicated by the change in the materials of the villagers' houses, from bamboo to brick. The village is located along the main road, and moreover enjoys other infrastructures such as electricity supply, tubewells for drinking water, fly-proof latrines, etc.

The main cottage industries of Ma Gyi Sauk village are sewing, knitting, and weaving, and all of which engage the village women. The number of the households working in cottage industry sector has been increasing, to which raising educational status of the village should be contributing. The business environments have been favorable for all of those industries along with good demands, being also benefited from the recent rehabilitation of the road linking the village and the market. As a result, the economic situations of the village have been better than the past. The villagers define; 1) the better-off as those with enough capitals for running their business, and 2) the middle as those having more than one income source to cover the working capitals for their prime business.

Legaing village has a variety of cottage industries such as crispy snack production and sales, mechanical workshop, rice milling, electric workshop, etc. All of those industries have been growing, as a result of; 1) being branded as the village's special product (crispy snack), 2) farm mechanization (mechanical workshop), 3) increase in rice production by market liberalization and irrigation (rice milling), 4) increase in the needs of TV and radio assembly and repair by the raise of living standards (electric workshop), 5) availability of more income opportunities (daily labor), etc.

Most of them engaged in cottage industry in Legaing village, however, regard themselves as middle class, which indicates they earn less incomes than the farmers with large landholdings. The village shows that the cottage industry has been developed, along with irrigated agriculture, in the growth of the agri-related industries such as rice milling and mechanical workshop. The situation in which the villagers enjoy better living standards has further inspired the growth of electric workshop and other life-related industries.

2.6 Existence of the Landless in the Study Area

Farmland in Myanmar is owned by the Union based on the "Land Nationalization Act" enacted in 1953. By the Act, farmers only hold landholding right for cultivation but proprietorship of farmland is not allowed. Although no agricultural land shall be mortgaged, sold or otherwise transferred or divided (by paragraph 4 of the Land Nationalization Act, 1953), land holder right is granted till to next generations especially for those who work in the farmlands as their main living and the lands are utilized in accordance with their parents. When the parents are getting old and unable to work well, then the descendants have the right to manage and continue working for the farm business. Moreover re-concentration of farmlands in the hands of a few rich households is controlled.

After independence from British colony, newly formed Myanmar government enacted the Land Nationalization Act (1948 and 1953) as a regard of looking after poor landless citizens through land reforms. Nevertheless, the farmland reallocation was not finished to cover all over the Country owing to conditions and situation of the Country at that time of post-independence. Therefore landless may have more occurred in the regions than ever before where farmland reallocation was not accomplished. There are still landless people in rural area as of now, and some best reasons that explain the existence of landless and increasing number of rural landless might be interest of people in farming work, increasing population in limited land resources, people's livelihood in off-farm work and better job opportunities other than farming in the rural areas.

2.6.1 History of Land Reform in the Union and Existence of the Landless

Although the Land Nationalization Acts had great advantages for most of poor rural landless during the post-independence era of Myanmar, the land reallocation through the reformation of land policy could not cover all the whole Country. Nowadays, the Government of the Union of Myanmar is encouraging to upgrade agriculture sector as well as livelihood of rural people, by implementing market-oriented economy. On the other hand, the Government is creating job opportunities for those rural landless to absorb in other industry sectors. In this connection, according to the result of interview surveys in 6 villages of the Pilot Project conducted in 2006/07, no one reported to have become complete landless in nowadays situation. That is to say that those people who are degenerated from ordinary farmers to the newly appeared landless would be quite rare. Thus, it can be said that the major reason why the landless actually exists in rural area would be imputed to the aforementioned reasons.

Though the landless farmers have not their own, they can make money by working as one-season hired or casual labour to peasant farmers, which shall support part of income for their livelihood. The landless also have works such as cutting wood, bamboo as sources of income. They can get money by charcoal making and selling bamboo-based materials (e.g. baskets), mats, and other home utilities. So they have several sources of income even during off-season. These materials are commonly in need of all households in the villages as well as in towns. To produce these, sources for raw materials and skillful labour can be available in villages only.

The enactment of "Land Nationalization Act in 1948" by the Union was coincided with its independence in January 1948. The Act aimed at expelling absentee landlord, and distribution of landholding right to tenants. As for land ownership, however, it was not given to farmers and the Union held it in order to liberalize farmlands formerly owned by the absentee landlords and to prevent their revival in the future. Under the Act, the tillage right was made valid for only one generation, thus probably intending to prepare for future land holding by farmer group as was the case in China. Therefore, the tillage right given may be deemed as "the loosely-bound landholding right".

The enactment of this land reform in 1948 was interrupted in the following year. The reason of the

interruption had been attributed to not only furious resistance by such land lent collectors as landowners, money lenders and merchants but also opposition by peasant farmers to the abolishment of private land ownership. The target of this land reform covered only parts of Myanmar such as lower Myanmar excluding ethnic minority regions and upper Myanmar including the CDZ.

Of them, in lower Myanmar Indian money-lending cast owned as much as half of the farmlands without any interest on agriculture, whereas in upper Myanmar where Bamar race predominated in ethnic composition, farmer owned 7,125,710 acre (2,850,284 ha) equivalent to 87% of the total farmland of 8,203,498 acre (3,280,000 ha). Particularly in upper Myanmar, opposition to the abolishment of private land ownership by the same ethnic Bamar race may have been one of the reasons that made the then independence regime withdraw Land Nationalization Act in 1948.

Later in 1953, "Land Nationalization Act" was promulgated with a nominal objective of supervising agriculture but actually in such a form as acknowledging continuance of absentee landlords. In this Act, private transfer of farmland was strictly limited, but division, exchange and inherited holding were admitted for both farm households exempted from farmland expropriation and those allocated with farmland. In other words, the Act allowed farmers not only to have right of farmland use but also to have disposal right in broad range. Moreover, it was stipulated that both exempted and allocated farm households were allowed to have landholding right. Namely, the Act was based on land ownership or "tightly-bound landholding right".

Nevertheless, Land Nationalization Act in 1953 was not thoroughly put into effect from the standpoint of farmland transfer from landlords to tenants and to peasant laborers. Farm acreage under non-farming farmers (i.e., major absentee landlords) accounted for 33.4% of the total farmland area as of 1947, while that in 1958, after 5 years when the application of Land Nationalization Act in 1953 was substantially interrupted still remained about 27% (Pati yeiya dhadinsin, No.3 Mar. 1965). This means that only 6% of the total farmland was offered as the target of expropriation - reallocation - during the time the Act had been effective. The most plausible reason why the Act was interrupted only after 5 years since the enactment is said to be insecurity under civil administration at that time. The area securely governed by the then central government at this period had been only Yangon and its outskirts, whilst administratively difficult land reform could not be enforced unless mighty power governed over the target areas.

After all, land reform made only little progress by Land Nationalization Act in 1948 with the opposition by farmers. Either with Land Nationalization Act in 1953, even under a policy of partially admitting "land ownership", land reform again did little in the targeted form of disintegration of absentee landlords and allocation of farmland to tenants. This is due to then instable administration by civil power though peasants and tenants supported the reform. Another major reason may be due to failure of establishing official organization covering village level with enough competency to perform land reform. Under such instable circumstances, no measures were as a matter of course taken for farm laborers who constituted the landless in villages.

Later, a revolutionary council took the administrative power in March 1962, and the resulted revolution power took a policy with regard to land reform orienting again towards "the loosely-bound landholding right" once prevailed in 1948. The power intended to guard tenant's leasehold right through Tenancy Act in 1963 as well as Act of Protection of Farmers' Rights and also to prevent the degradation of owner-farmers to tenants or to the landless owing to mortgaged farmland. Through these efforts of bringing all the farmland under nationally owned property, the Government tried to allocate farmland to those who needed land including the landless. However, it considered this plan of nationalizing and allocating existing farmland inapplicable any more in March 1964 by the reason of insufficient farmland area against needy agricultural population. At that time of land reform

implemented, it was impossible to estimate around how much farmland area was required to allocate piece of land to peasant laborers because no data was available for estimating then-landless population engaged in farm labor.

However, since the revolution power aspired joint ownership of farmland by group, there could be an assumption that it envisaged strongly enforcing national control of farmland to form group farming where it intended to accommodate the landless[1]. Surely, there was a movement that farm laborers were organized into farming groups in alluvium lands and group farming was intensified so that all the farm laborers could be absorbed in these groups. However, in real life grouping was too sluggish entailing in current issue of the landless (farm laborers) living within villages.

2.6.2 Farm Household, Off-farm Household and Agricultural Laborers

Around three quarters of the national population live in rural areas in the Union. However, all of them are not farmers. This situation is the same in the CDZ. They are divided into farm households to which landholding right is vested by the Union and off-farm ones without landholding right. In other words, the only difference between them is that whether a household has farmland with landholding right or not. The landless is categorized into the latter. Off-farm households are further classified into "households engaged in farm labor" and "those engaged in off-farm labor.

Households engaged in farm labor are referred to as those which have income through working as a laborer hired by farm households, while households engaged in off-farm labor are composed of carpenters, official staff, venders, teaching staff, those engaged in cottage industry, livestock rearing villager, etc. Part of non-farmers is considered consisting of households engaged in farm labor, however, no formal statistics are available as to their number. These households engaged in farm labor relying their major income on wages from farm labor constitute the poorest strata in villages. As there exists no explicit definition on farm labor households, here it is defined as "households earning 50% or more of their income from agricultural labor", the same as defined by Fujita[2] et al.

1) Off-farm Households / The Landless at Country Level

No statistical data has so far been published with regard to the landless. Notwithstanding, farm households with landholding right have been registered at PDC offices under each TS in so far as all the land has been nationalized but only the right of tillage have been vested to farmers. Therefore, the number of so-called "the landless" can be estimated from the difference between the number of total households and that of the registered farm households (with landholding right). UNDP/FAO have provided the number of farm households by land size and the landless households in 17 divisions/ states as a summarized table: Distribution of Different Types of Households in Myanmar (2003) in Agricultural Sector Review and Investment Strategy, 2004 (refer to Table 2.6.1).

According to Table 2.6.1, the total households in the Union stood at about 8.06 million, out of which farm households were counted at 4.82 million and the rate of farm households to the total was 59.9% as of year 2003. It follows that landless households, equivalent to farm households subtracted from the total ones, come to 3.23 million accounting for 40.1% of the total households. This table also lists up rural population, rural households and the landless where an assumption was made that the rate of the landless in rural areas is equal to that between the total landless and the total households. Hence, the rate of the landless in only the rural areas cannot precisely be estimated. However, taking that three quarters of the total population live in rural areas into account, it can be assumed that the

[1] Leadership and organizations of rural development in Southeast Asia, IDE, JETRO, Noriyoshi KANO, Jan. 1991 (Japanese version)
[2] Change in Myanmar's Transitional Economy, IDE, JETRO, Koichi FUJITA, Oct. 2005 (Japanese version)

rate of the landless in the rural area is not significantly different from the overall rate of the landless: that is about 40%.

Table 2.6.1 Number of farm households by land size and the landless households by division/ state in Myanmar, of the landless and the rate of the landless to the total

Division/ State	No. of HHs	Number of Households by Land Size							Landless HHs	% of Landless HHs	% of Rural Population	No. of Rural HHs	No. of Rural Landless HHs
		<5ac	5-10 ac	10-20 ac	20-50 ac	50-100 ac	>100 ac	Total					
	①							②	③=①-②	④=③/①*100		⑤	⑥
Mandalay	1,197,334	320,665	177,138	69,022	18,851	113	7	585,796	611,538	**51.1**	73.5	880,040	449,480
%	100	26.8	14.8	5.8	1.6	0.0	0.0	48.9					18.40
Sagaing	787,081	276,320	167,902	80,076	24,294	596	0	549,188	237,893	**30.2**	86.1	677,677	204,826
%	100	35.1	21.3	10.2	3.1	0.1	0.0	69.8					8.39
Magway	586,156	380,241	121,906	49,935	10,353	139	4	562,578	23,578	**4.0**	84.8	497,060	19,994
%	100	64.9	20.8	8.5	1.8	0.0	0.0	96.0					0.82
Kayah	36,183	20,832	9,548	830	89	1	0	31,300	4,883	**13.5**	73.8	26,703	3,604
%	100	57.6	26.4	2.3	0.2	0.0	0.0	86.5					0.15
Kayin	191,990	121,004	31,538	10,884	2,270	38	13	165,747	26,243	**13.7**	73.8	141,689	19,367
%	100	63.0	16.4	5.7	1.2	0.0	0.0	86.3					0.79
Chin	78,855	56,753	5,571	263	11	0	0	62,598	16,257	**20.6**	85.4	67,342	13,883
%	100	72.0	7.1	0.3	0.0	0.0	0.0	79.4					0.57
Tanintharyi	187,309	104,154	26,674	6,419	1,707	233	90	139,277	48,032	**25.6**	76.4	143,104	36,696
%	100	55.6	14.2	3.4	0.9	0.1	0.0	74.4					1.50
Mon	335,584	137,468	48,585	24,289	5,334	106	41	215,823	119,761	**35.7**	71.8	240,949	85,988
%	100	41.0	14.5	7.2	1.6	0.0	0.0	64.3					3.52
Rakhine	463,590	222,336	49,948	12,013	3,598	139	4	288,038	175,552	**37.9**	85.1	394,515	149,395
%	100	48.0	10.8	2.6	0.8	0.0	0.0	62.1					6.12
Ayeyarwaddy	1,108,770	415,070	209,356	101,184	21,106	626	183	747,525	361,245	**32.6**	85.1	943,563	307,419
%	100	37.4	18.9	9.1	1.9	0.1	0.0	67.4					12.59
Bago(east)	512,928	136,818	96,635	43,303	6,121	227	132	283,236	229,692	**44.8**	80.5	412,907	184,902
%	100	26.7	18.8	8.4	1.2	0.0	0.0	55.2					7.57
Bago(west)	579,677	161,648	85,765	21,957	1,317	11	10	270,708	308,969	**53.3**	80.5	466,640	248,720
%	100	27.9	14.8	3.8	0.2	0.0	0.0	46.7					10.18
Yangon	1,092,886	70,015	45,606	44,248	10,009	354	192	170,424	922,462	**84.4**	31.8	347,538	293,343
%	100	6.4	4.2	4.0	0.9	0.0	0.0	15.6					12.01
Shan(south)	338,667	167,869	44,418	12,877	3,379	31	8	228,582	110,085	**32.5**	78.7	266,531	86,637
%	100	49.6	13.1	3.8	1.0	0.0	0.0	67.5					3.55
Shan(north)	297,685	198,272	51,392	10,786	2,425	50	69	262,994	34,691	**11.7**	78.7	234,278	27,302
%	100	66.6	17.3	3.6	0.8	0.0	0.0	88.3					1.12
Shan(east)	121,525	117,257	3,820	380	39	8	11	121,515	10	**0.0**	78.7	95,640	8
%	100	96.5	3.1	0.3	0.0	0.0	0.0	100.0					0.00
Kachin	143,526	107,198	24,588	6,457	763	26	54	139,086	4,440	**3.1**	77.9	111,807	3,459
%	100	74.7	17.1	4.5	0.5	0.0	0.0	96.9					0.14
Total	**8,059,746**	**3,013,920**	**1,200,390**	**494,923**	**111,666**	**2,698**	**818**	**4,824,415**	**3,235,331**	**40.1**	**75.5**	**6,085,108**	**2,442,675**
%	**100**	**37.4**	**14.9**	**6.1**	**1.4**	**0.03**	**0.01**	**59.9**					**100.00**

Source. Myanmar Agricultural Sector Review and Investment Strategy, UNDP/FAO 2004. Original data from DAP

Viewing 3 divisions, namely Mandalay, Sagaing, Magway where the Study Area is located, the rate of the landless in Mandalay Division where the Mandalay City is included shows the highest of 51.1%, followed by that in Sagaing Division standing at 30.2%. The rate of the landless in Magway is listed as only 4%, but this figure is evidently a result of underestimation, seemingly statistical error or misprinting of order. As stated earlier, as number of the farm households exists as a statistical data, it may be reasonable that such an error in statistics or in order was made at the number of farm households in Magway Division.

2) Off-farm Households / The Landless in 51 TS Within the Study Area

The Study Team has collected various kinds of socio-economic information in 2006 as basic data to provide poverty profiles of 51 TSs in the Study Area. With these data the rates of off-farm households / farm households by TS were calculated and summarized in Figure 2.6.1. Viewing the figure the rates of off-farm households are found in a range of about 20 - 60% though considerable difference is observed among TSs. The lowest rate of off-farm households is found in Ayadaw TS (5%) in Sagaing Division, whereas the highest is recorded in Pakokku TS (80%) in Magway Division.

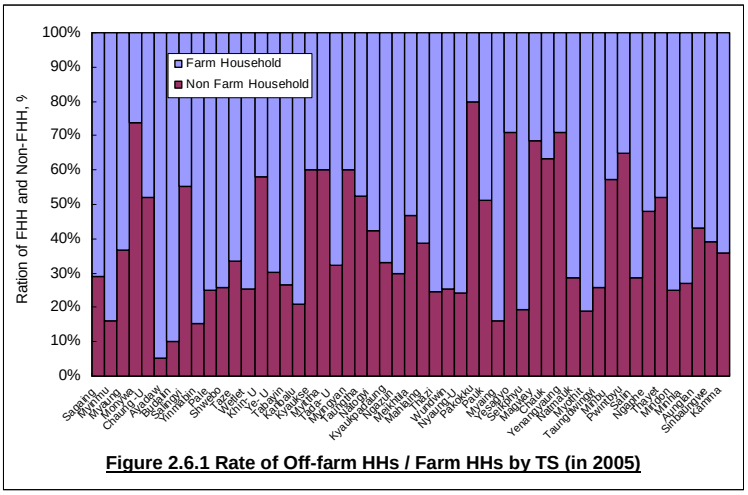


Figure 2.6.1 Rate of Off-farm HHs / Farm HHs by TS (in 2005)

The large difference in the rate of farm/ off-farm households by TS is said to have bearing on whether land

reform has been executed in the past or not (according to verbal communication with elder cadres and those who have related with MAS). This fact suggests that though the land reform was not perfectly reinforced as a whole, a general tendency of lower rate in terms of off-farm households was quite probable in TSs where land reform had been carried out.

Table 2.6.2 summarizes number of farm households, off-farm ones and the breakdown of off-farm ones in 51 TSs. Viewing this table, Magway Division has the highest rate of off-farm households, 49%, followed by Mandalay Division with 43%, and Sagaing Division has the lowest rate at 33%. Then, the rate of off-farm households in terms of the whole Study Area (or landless ratio) stands at 42%. The data presented in the table are collected from PDC offices in the districts where off-farm households are in more detail broken into the landless and others including official employees etc and the former are further sub-divided into non-farm and casual labor.

Here, it is interpreted that non-farm includes the households that raise off-farm income, namely with major livelihood means in small-scale industries, plasterers, carpenters etc, while casual labor does those who are engaged in construction labor works in common and also in farm labor. However, this division is not necessarily definite because no statistics exist as to livelihood and income sources at TS level. Further, since the landless are apt to be in general engaged in several kinds of labor works in order to sustain their life, it is difficult to definitely categorize them by their major income sources without any household survey on the income.

Table 2.6.2 No. of FHHs, Off-farm HHs and the Rate of FHHs / Off-Farm HHs in 3 Divisions in 2005

Division Study Area only	Farm Households	Non Farm Household	Landless		Others	Total
			Non-Farm	Casual Labor		
Sagaing	375,710	188,872	67,623	65,168	56,081	564,582
%	67	33	12	12	10	100
Mandalay	344,751	262,093	110,737	49,928	101,428	606,844
%	57	43	18	8	17	100
Magway	342,511	326,970	110,062	127,410	89,498	669,481
%	51	49	16	19	13	100
Total	1,062,972	777,935	288,422	242,506	247,007	1,840,907
%	**58**	**42**	**16**	**13**	**13**	**100**

Source: PDC Offices of the Districts

In anyway, the rate of off-farm households (number of the landless), 42%, can be approximated to the national average of 40%. In addition, it can be said that those who consist of the poorest of the poor are the farm labors owing to its explicit seasonally and they may consist of 30 % at maximum as a sum of non-farm landless (16%) and casual labor (13%) as shown in the above table.

3) Off-farm Households / The Landless in the Sampled Villages

The Study Team has conducted a PRA survey in 17 villages in 2006, where number of farm/ off-farm households were inquired. Further, the same inquiry was made in the target 6 villages of the Pilot Project implemented in 2007/08. Table 2.6.3 shows the colleted results on the total number of households, that of farm households and that of off-farm ones in these 17 villages and 6 villages.

Table 2.6.3 Total No. of Households, That of Farm Households and of Off-farm One in Sampled Villages in 2006 & 2007

Survey	Division	TS	Village	Total HHs	Farm Households		Non-Farm Households	
					No.	%	No.	%
PRA survey in 2006	Sagaing	Myinmu	Garu	196	141	71.9	55	28.1
		Chaung U	Kyauk Sit Kan	144	100	69.4	44	30.6
		Ayadaw	Ywar Shay	82	15	18.3	67	**81.7**
		Pale	Letpakan	303	229	75.6	74	**24.4**
		Khin U	Myay Ni Sho	132	83	62.9	49	37.1
		Subtotal		857	568	66.3	289	33.7
	Magway	Yesagyo	Myay Phyu	101	23	22.8	78	77.2
		Chauk	Chaung Pike	112	82	73.2	30	26.8
		Magway	Si Pin Tha	115	21	18.3	94	81.7
		Myothit	Magyicho	142	87	61.3	55	38.7
		Pwintbyu	Ywar Thit	89	43	48.3	46	51.7

		Thayet	San Aite	227	157	69.2	70	30.8
		Subtotal		786	413	52.5	373	47.5
	Mandalay	Taungtha	Chaung Nar	250	71	28.4	179	71.6
		Ngazun	Zalokema	210	45	21.4	165	78.6
		Meikhtila	Let Pan Kaung	158	83	52.5	75	47.5
		Thazi	Pyun Kan	240	202	84.2	38	15.8
		Wundwin	Leik Tet	98	40	40.8	58	59.2
		Nyaung U	Ku Ywar	92	23	25.0	69	75.0
		Subtotal		1,048	464	44.3	584	55.7
	Above Total			**2,691**	**1,445**	**53.7**	**1,246**	**46.3**
Pilot Village in 2007/08	Sagaing	Myinmu	Ar La Ka Pa	1,152	640	55.6	512	44.4
		Ayadaw	Ma Gyi Sauk	260	100	38.5	160	**61.5**
	Mandalay	Tada U	Khaungkawe	242	144	59.5	98	40.5
		Ngazun	Magyi	245	200	81.6	45	**18.4**
	Magway	Chauk	Mingan	110	56	50.9	54	49.1
		Pwintbyu	Legaing	776	326	42.0	450	58.0
	Above Total			**2,785**	**1,466**	**52.6**	**1,319**	**47.4**
Grand Total				**5,476**	**2,911**	**106**	**2,565**	**46.8**

Source: interviewed result of PRA Survey conducted in 2006, interview by the Study Team in the target villages of the Pilot Project in 2007

With an overview of 17 villages for the PRA survey in 2006, the highest rate of no-farm household was found in Ywar Shay Village in Sagaing Division standing at 82%, while the lowest one was identified in Letpakan in the same division at 24%. Then, as to 6 target villages of the Pilot Project in 2007/08, the highest rate of off-farm households is recorded at 62% in Ma Gyi Sauk Village and the lowest at 18% in Magyi Village.

The average rate of off-farm households among 17 villages targeted by PRA survey is 46%, while that among 6 villages targeted by the Pilot Project in 2007/08 is 47%. A wide variation in the rate is seen from village to village and the reason is considered similar to what is mentioned on Figure 2.6.1 as to wide difference in the rates of farm/ off-farm households. This rate of off-farm households, 47%, is approximately comparable to the national average at 40% and the calculated mean of 42% on related TS basis though the level referred to is somewhat higher than these.

2.6.3 Livelihood Means of the Landless

From what is mentioned above, it is identified that around 40% of off-farm strata exists in the Union although partial inconformity among various sources of statistical data is observed. Also, it was recognized that the rate of off-farm households stands at 42% at the level of TSs within the Study Area, and it is estimated at 46 - 47% from the result of village level survey though number of samples are limited. These results will lead to a conclusion that villagers who do not hold any land - termed as off-farm households/ the landless - are estimated at around 40 - 50% (at the rate of 1 household out of 2) in the rural part of the Study Area. Off-farm households/ the landless generally have plural sources of income in addition to farm labor, and the following states their representative means of livelihood/ cash income sources.

1) Engagement in Farm Labor

The commonest income source of landless households constitutes of farm labor. Even if farm laborers are indispensable in terms of farming, the hiring opportunities are not guaranteed throughout the year because off-season accompanies with highly seasonal farming practices. The periods with high rate of hired labor in terms of paddy cultivation fall on seedling preparation and transplanting, and on the harvesting works in case of upland farming. During these periods many laborers share the given hiring opportunities.

Work division is observed in such a way that male tends to work for seedling preparations and female does for transplanting but both male and female are engaged in harvesting and threshing. According to interview results held at 6 target villages of the Pilot Project in 2007/08, the working duration under farm labor ranges from the longest 7 months and the shortest around 1.5 months only or so.

Some laborers seek for hiring opportunities in other villages than their native ones in the case of the villages with short labor duration. Moreover, a few cases are observed where competition will arise because the number of landless households exceeds that of farm ones, leading to narrower chances of hired labor earning among the landless. Such cases are not only identified in Ma Gyi Sauk Village in Monywa TS in Sagaing Division but also in Chaung Paik Village in Chauk TS that the Study Team visited in the occasion of examining the target candidate villages for the Pilot Project.

2) Small-scale Industrial Labor

There are some cases where hiring opportunities in small-scale industries play pivotal role in securing income for the landless rather than farm labor accompanying with off-season. A typical example is found in Khaungkawe Village in Tada U TS in Mandalay Division, one of the target villages under the Pilot Project implemented in 2007, where employment by local small-sized industries offers a precious income sources for the landless. A lot of landless people who are not at all engaged in farm labor are found in this village, though the mainstream of the village's economy is still agriculture.

Somewhat different character from above example it may have, major chances the landless are as well hired lie in off-farm small-scale industries in the case where mainstream of village economy has been founded on small size industrial activities. In such cases, agricultural economy is positioned at subsidiary role, as observed in Mingan Village in Chauk TS in Magway Division where about 80 % of the villagers are engaged in sandstone ware processing industry[3]. Khaungkawe Village, bestowed with favorable marketing conditions supported by sustainable demand, may bring about more sustainable employment to the landless than Mingan Village can do. However, in both cases small industries offer precious opportunities to the landless.

3) Livestock Raising

Some of laborer's households hold livestock to supplement their labor wage income. The PRA survey conducted in 2006 in 17 villages revealed that 69 out of 170 were landless households, out of these 12 households (17%) held livestock. They consisted of 6 households raising goats, one with sheep, 4 with cattle and one with pigs. Annual livestock income of these 12 households with goats as major livestock species accounted for 22% of the total annual household income.

Other than self-owned livestock, some households have made year-round livestock rearing contracts with other livestock owners undertaking feeding of the owner's herds. In this case, the contracts are concluded on condition that 50% of the delivered offspring can be transferred to the contracted undertakers. Some of such undertakers have become livestock owners by multiplying received offspring. In addition, hiring opportunities for the landless include undertaking of grazing herds of indigenous cattle and goats on the daily wage basis (e.g. 500 Kyat/day as of September 2007) and sceneries with grazing boys/ girls and youths are common everywhere.

4) Off-village Piecework

The CDZ is thought to be a source of supplying labor for construction works in the metropolitan Nay Pyi Taw where construction is under way. Though it is hard to identify number of laborers by their addresses, a village in Magway Division is reported that villagers of hundred order are constantly leaving their villages for a duration of 1 - 3 months for the capital Nay Pyi Taw and some other urban areas to do casual work. HIES (Household Income and Expenditure Survey) in 1997 revealed that Magway Division was placed at the lowest income level among related 3 divisions, and this fact

[3] There are only 3 places in Myanmar where *Thanakha* grinder made of sandstone can be produced. One of the villages is the Mingan Village referred here, wherein almost 80% or more people are engaged in sandstone processing in form of either producer or trader.

implies that the income level is in line with the rate of villagers engaged in off-village piecework.

2.6.4 Involvement in Farm Labor of the Landless

As mentioned above, "the households engaged in farm labor" that are mainly dependent on agricultural labor wages form the worse off class in village communities. The households engaged in farm labor often have plural cash-income sources in addition to the engagement in farm labor because of seasonality in farm employment. As to the scale of existing households engaged in farm labor, an estimation was tried in the household income survey carried out in the selected 8 villages included in the Pilot Project by the Government of Myanmar that was implemented in 41 TSs throughout the Country in 2001, as referred to in "Changes in Myanmar's Transitional Economy".

Table 2.6.4 Rate of No. of Farm HHs, Off-farm HHs and Farm Laborers in Sample villages by Fujita et al (2001)

Division	Townships	Total Households ①	of which, FHHs ②	of which Non-FHHs ③	Ratio of Non- Farm Households ③/①	No. of Sample Non-FHHs ④	of which, Tenants	of which, Farm Labors ⑤	of which, Non-Farm Labors	Ratio of Farm Labors ⑥=⑤/④	Ratio of Farm Labor HHs ④×⑥
Tanintharyi	Myeik	515	232	283	55.0	33	1	17	15	51.5	28.3
Bago	Waw	456	213	243	53.3	40	0	30	10	75.0	40.0
Magway	Magway	219	118	101	46.1	37	6	18	13	48.6	22.4
	Taundwingyi	662	326	336	50.8	16	0	12	4	75.0	38.1
	Subtotal	881	444	437	49.6	53	6	30	17	56.6	28.1
Mandalay	Kyaukse	510	334	176	34.5	16	2	12	2	75.0	25.9
Southern Shan	Nyaungshwe	842	544	298	35.4	12	0	9	3	75.0	26.5
	Kalaw	497	622	75	15.1	6	0	2	4	33.3	5.0
Ayeyarwaddy	Myaungmya	1,167	647	520	44.6	20	5	7	8	35.0	15.6
Total		5,749	3,480	2,469	42.9	233	20	137	76	58.8	25.3

Source : Market Oriented Economy and farm Labor in Myanmar, Japanese Version, Fujita Koichi

In this household income survey, 2 villages belonging to a TS in Magway Division and one village in a TS in Mandalay Division were included. According to the said survey, off-farm households without landholding right accounted for 43% as a mean of surveyed 8 villages. Out of this, farm labor households that rely more than 50% of their household income on income from farm labor wages accounted for 59% on average, equivalent to 25% of the total number of households in these villages.

Summarizing what is mentioned above, the rate of off-farm households in the Study Area ranges about 40 - 50%, out of which 60% or equivalent to 20 - 30% of the total village households are estimated to earn more than half of their income from farm labor wages. That is to say, one out of about 2 households is off-farm household without landholding right, and one out of 3 - 5 households can be estimated as ones earning more than half of the household income from farm labor among the landless. Likewise, the fact that the ratio between farm and off-farm households greatly varies by village or by TS can be deemed as a typical character observed both in the Study Area and throughout the Country.

2.6.5 Relationship Between Landless Farm Laborers and Farmers

Farm labor households earn their income through being employed by farm households, while farm households hire them to weed and to harvest in upland farming and to carry and transplant seedlings, to weed, to harvest and to thresh in paddy cropping, thus interrelationship between them is observed. This is because only self-supplied family labor cannot meet timely cultivation and timely harvesting. Seemingly that family labor can cover these requirements in small-scale farm households, possibility can hardly be denied that an income insuring principle exerts to provide chances of employment for the landless. Table 2.6.5 and Table 2.6.6 give cases of employing laborers surveyed by Takahashi[4].

Table 2.6.5 Pre-monsoon Paddy in Tin Daung Gyi Village (Kyaukse TS, Mandalay Division) unit: Kyat/ac

Labor Type	Below 6ac	6 to12 ac	12 to 18 ac	18 to 24 ac	Above 24 ac
Family labor	384	320	151	221	0
Hired labor	2,918	3,034	3,126	3,176	3,447

Source: "Rural Economy in Contemporary Myanmar" Akio Takahashi, 2000

[4] Rural Economy in Contemporary Myanmar, Akio TAKAHASHI, 2000, Tokyo University Publication (Japanese version)

Table 2.6.6 Upland Crops in Kan Tha Lay Village(Magway TS, Magway Division) unit: Kyat/ac

Labor Type	Groundnut	Sesame	Green gram	Sorghum
Family labor	79	127	125	276
Hired labor	763	905	808	504

Source "Rural Economy in Contemporary Myanmar" Akio Takahashi, 2000

Table 2.6.5 shows paddy cropping, where farm laborers are always hired regardless of farming scale in terms of work per acre. Viewing this, it is understood that except farmers with over 24 acre/household, there found little difference among hired labor wages regardless of acreage per farm household, though hiring wage payment is somewhat lower in those with less than 6 acre/household. Likewise, Table 2.6.6 indicates relationship between family labor (already reflected in the conversion into labor wage) and hired labor wages in upland farming where labor hiring is also identified.

While hiring of farm labor is indispensable in the CDZ where agriculture has not yet been much mechanized, mutual interdependency is observed in a way that farm households offer opportunity of wage labor for the landless, as seen in the above example of paddy cropping where even petty-sized farmers are greatly dependant on hired labor. Therefore, the relationship between the farm and non-farm household may be illustrated as in Figure 2.6.2.

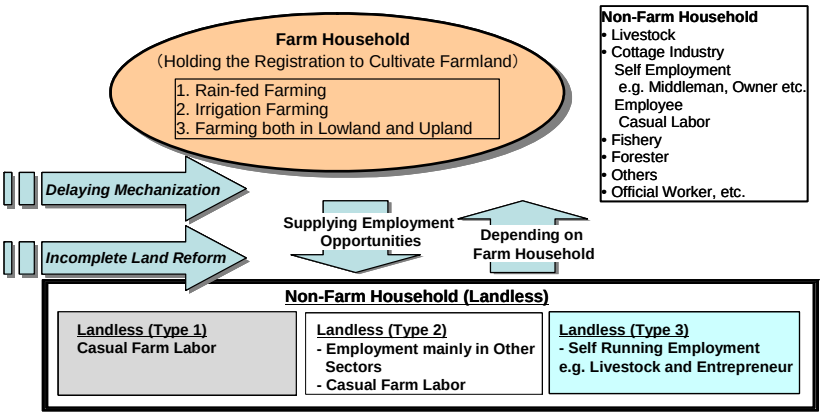


Figure 2.6.2 Household Type and Employment Structure in CDZ

2.6.6 Extent of the Landless in the Central Dry Zone

Summarizing aforementioned discussions, it is concluded that non-farm households consist of 42 %[5] of the total rural households in the Central Dry Zone, say about one household out of every two in rural areas of CDZ does not have farm land (in precisely, land tillage right). One of the characteristics of the landless in the CDZ is the wide variation in their existence from township to township and also by village. An example is that the lowest rate of non-farm households is only 5 % found in Ayadaw TS in Sagaing Division, whereas the highest rate is 80 % recorded in Pakokku TS (80%) in Magway Division.

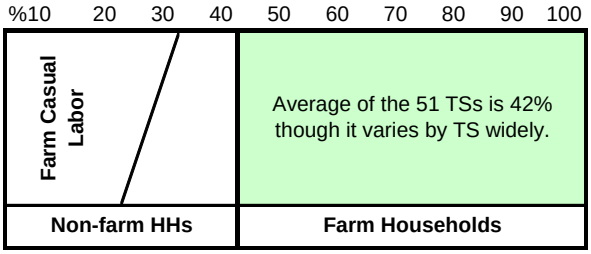


Figure 2.6.3 Ratio of Non-farm HH and Farm HH

The landless people are engaged in several occupations such as employment in cottage industry, rearing of livestock, construction work, farm casual labor, etc. The poorest of the poor among the landless people can be found in farm casual labor. Due to the nature of the seasonality in farming activities, farm casual labor are not dependent totally on farm laboring but are trying to engage in any kind of income activities. In simplicity, assuming that farm casual labor are the ones whose top income comes from farm laboring, they are estimated at about 20 to 30 % according to a sample field survey by Fujita. It is, therefore, that one household out of every 3 to 5 households in rural area of CDZ are farm casual labors.

[5] According to information from District PDC Office in Mandalay, Sagaing, and Magway Divisions.

CHAPTER 3 SUCCESS STORIES AND PIT FALL STORIES FOR CDZ POPULATION

3.1 Rationale of the Story Identification and its Methodologies

It is really a difficult matter for the third person to judge a personal/family history whether it is successful or ended up in ruin. Despite many of the villagers living in a community give an accorded reply on judgment of a villager's history without any hesitation as if there were tacit understanding among them. As we know that information entering from outside is very limited in countryside in Myanmar, this limitation inversely provides background to share detailed information within the village by many villagers.

Furthermore, wherever agriculture constitutes major production means, villager's largest concern is always oriented to ambient conditions around their farmland and holding area, thus it is an easy matter for a villager to judge whether other villagers can sufficiently sustain their families or not even if their family number is quite different from. There seems to be common scale of recognition on the base of their judgment whether one is successfully getting along or not. It may depend on their financial capacity to be adequate to hold a religious event or not. [1]

New testament says "That man shall not live by bread alone"[2], while as German poet Heine told "Hail to that religion which could pour a few sweet soporific drops into the bitter cup of the suffering human race, spiritual opium"[3], there seems no difference between Europe and the CDZ in Myanmar as to the fact that religion or belief gives large impact on people's life. In Myanmar, 85% of the nation are Buddhists, and majority of inhabitants living in the target 6 villages are believed to be Buddhists, so religious events or deeds sometimes give significant influence on their usual and economic activities.

There are people who have flexible interpretation on religious deeds. Meanwhile, there are also many others who take them for serious to such an extent so their deeds sometimes deeply affect their livelihood. Yet, they can feel being happy by what they have done for religion even though their household budgets were exacerbated by their religious dedication.

In this chapter, the results of interviews are presented, which interviews were conducted upon understanding such a background. Prior to the interviews, the Study team asked village chairman or other cadres or elder persons in each village to introduce these examples of different past careers who are deemed to have spent successful career in the village or to have faltered/fallen into a pitfall. The contents described below are nothing but the traces of the responder villager's life up to this moment, and what careers these responder villagers have from now onward are pendent as a matter of course.

All of the introduced and interviewed 36 persons served for typical examples of successful or faltered careers. Luckily, these examples are not desirable or undesirable cases in a religious sense at all (in fact, though, there are some cases that big amount of donation had triggered getting in a pitfall). In other words, the selection of these examples matches with the intention of the Study team aiming at poverty reduction in economic term, and no need of altering the Study team's recognition on success or failure towards villagers through those interviews. Out of the results obtained from 36 respondents, the following shows 12 examples on the trace of career consisting of 2 respondents from each target village.

[1] For instance, when one identifies the base of defining one as rich or poor to a villager in the occasion of PRA in a WS, the replies quoting the capability of holding donation ceremony or doing social contribution are always ranked in higher positions.
[2] Luke4:4, New Testament
[3] Heirich Heine, "Ludwig Borne iv", 1840, translated by T. S. Egan in 1881

3.2 Success Stories

Case 1: Purchase of pure gold, saving, pioneer spirit, information collection, diversified income sources

Mr. TW is a farmer living in Mingan Village, born in 1945 or 62years old (as of 2007). His parents held 10 acre of farmland, and he could live his childhood without inconvenient circumstances. He began to work when he was around 12 years old after completing 6th standard in his primary school. At that time, as he was too junior to be engaged in farming practices, he initiated his work helping his elder brother to manufacture mortars "Kyauk Pyin" made of sandstone. Two years later, he acquired the skill to produce Kyauk Pyin alone by himself. He could give all the income to his parents because he got along decent life without any concern for livelihood or future living.

Tractors, subcontracting plowing on village farmland, were still rare in early 1960s, and their operators were paid respect from villagers. So, a tractor operator was yearning vocation for him at that time, and in 1964 when he was 17 years old, he got a job in Farm Mechanization Department of Ministry of Agriculture. Because his service area was Meikhtila, fairly far from Mingan, he left his village alone for his service area, while his wife, married with him when she was 18 years old, happened to live with his parents.

At that time, he remitted all his allowances including per diem to his family only keeping 1/4 of basic salary for his meals. He spent his life with his family by inviting them from his native place for about 9 years from 1966 to 1974 it was his service period in Natmauk in Magway Division. His family waded efforts to save money satisfying with frugal meals and he himself has never indulged in spirits nor cigarettes until today. The saved money has been appropriated for purchasing pure gold for the purpose of asset building, and later the asset has sustained livelihood of his family.

In 1974, as he was transferred to Kyaukpadaung near his native place, Mingan, he built a small house within the homestead of his parents to begin new life. Though his salary base was higher than before, household expenditure outweighed his income owing to school expenses for his three children. He offset income shortage by selling deposited pure gold. Later, latter half of 1970s, the eldest daughter and the second eldest began to sell his village production of Kyauk Pyin and other sandstone products in other villages without any initial capital because they could ask brokers to make stock purchasing charge deferred payment. Since there had been only three or less people who sold Kyauk Pyin and other sandstone products out of his village then, these daughters could raise sizable income by vending the produce at pagoda festivals held in villages or in Yangon.

Because these daughters used to live thrifty life from their childhood, they strove for depositing saving by spending meagre living expenses, in the meantime succeeded in opening two retail stores of Kyauk Pyin and other sandstone products within market place of Yangon. Since the retail business carrying heavy sandstone produce was too hard for women with limited physical strength, they continued retail business by switching sandstone produce retailing into food groceries. As a result, they presently run 3 grocery stores. Meanwhile, Mr. TW resigned from government service in 1997, and started farming on 1.5 acre of inherited farmland and additional 1 acre he himself purchased, and he continued processing of sandstone during pause of farming practices.

Mr. TW could live within the remittances from his daughters in spite of his current retirement from the processing of sandstone, he could sell his farm produce harvested from his 2.5 acre farmland any time waiting for the price hike, thus obtaining higher return than before. Further, income sources of his family including his children were diversified including his own farming, food grocery stores run by hid daughters, his elder son's dealing with Kyauk Pyin and other sandstone products as a middleman, his younger son's dealing with farm produce as a broker. This mutually cooperating system within a family can compensate loss of income with gain through other sources.

Mr. TW points out the reasons why he can now live a roomy, affordable life, such as refraining from extravagancy, availability of children's cooperation, daughters becoming pioneers of selling masonry products at pagoda festivals and consequent new businesses based on various information obtained through the pioneered business. Finally, he plans to retire to private life to devote the rest of his life to charity and virtue.

Case 2: Multiple Management ; Farming +Livestock+jaggery (Small-scale Industries) and Health

Mr. CK, living in Magyi village is 78 years old (as of 2007) born in 1929. He learned reading and writing in a monastery, later married when he was 20 years old, started on his life with his mother-in-law who owned one acre of farmland. Because one acre was not enough to sustain a family, he worked as a farm laborer staying at his uncle's house. While he was working by abiding apart from his family, he also undertook another labor work to collect sweet sap from palm tree and he received wage in kind, a part of collected sap as wage. His wife initiated processing jaggery from the sap to sell. At the same time, she continued to save money by weaving and farm laborer. When he reached his age of around 30, he could purchase 3 heads of cows and 2 acre of farmland.

Later, he held a donation ceremony donating a part of saved money that would not affect his livelihood. After the ceremony, they toiled and continued savings and newly acquired 2 more acre of farmland by his 39 years old. They didn't spend much money for their children's wedding ceremony, and obtained 6 acre in total by purchasing from his uncle and as an inheritance by his 50 years old. When he was 55 he held the second donation ceremony with the affordable amount of savings.

In 1988, when he was 59 years old, all the money for sale of harvested wheat lost value by the government order of abolishing current currency notes, losing fund for cropping in subsequent year. However, he managed to continue farming by selling cows he fed at home. Afterward, as he could make his household better off with the help of his third son with farming and dairy husbandry, he initiated a business to purchase jaggery from other farmers to deposit and sell when the price hikes higher. Thereby his surplus of fund deposits increased, and he started lending money with interests to villagers. At present, he can make annual savings equivalent to about 120 baskets of wheat at the rate of farm-gate price.

In 2006, when he reached 77 years old, he held the third sumptuous donation ceremony by spending about 1.7 times as much as annual mean saving amount. As to the reasons why he could expand his farmland from only one acre to 11 acre, he concluded that he had been in good health with well-regulated way of living that enabled him to sustain farming and animal husbandry practices without resting. Further, he deems pit fallen people despite their toilsome efforts as those who had failed to dedicate themselves to pious deed on Buddhism in their previous life before they were born. As regards his future plan, since he has performed what he thinks it necessary to do in his secular life, he desires to continue to practice piety for his next career after he dies.

Case 3: Bottommost experiences, learning opportunity on a man of bad example living around, the unforgettable rejoicing of first profit, brotherhood solidarity

Mr. WT is a guitar key maker aged 43 (as of 2007), born in 1964 dwelling in Khaungkawe Village. He lost his father when he was in the 1st standard, and commuted to school up to 4th standard. His father had lain for a long period in bed before passing away and his elder brother also had fallen sick at that time. To cope with sickness, his family elaborately managed to contrive expenses for their treatments. After his father passed away, he could not buy even school utensils (textbooks and pencils). While his father was healthy his family had held 8 acre of farmland, a set of oxen-pulling plough (for two draft animals) and a calf, but most of them had been sold away to contrive treatment expenses for his father and elder brother. When his father died, only 2.5 acre of arable land and a

calf were left for the family.

Livelihood of his family was miserable by the time he withdrew from school at the 4th standard, and villagers walked avoiding his family because they were always asked for leasing money whenever meeting with his family. At that time he didn't have any memory of taking meats and fishes at all, only eating broken rice, and whenever food depleted he even made away with vegetables others cultivated.

His father was engaged in farming while he had been alive, and Mr. WT's elder brother manufactured guitar key, thus his family was sustained by these incomes. His elder brother's family began to live with his wife's family at the request of his wife after his father passed away. By this reason, the second eldest brother, then 14 year old began to engage in farming on the left 2.5 acre of farmland to sustain his family. Because his second eldest brother didn't have any farm implement to plow his land, he stayed other farmer's house as a farm laborer without wage but receiving foods and using free of charge two-oxen-pulled plough on his own farmland during the pause of hired farm labor.

After 3 years, the second eldest brother exchanges one acre of his farmland with an ox and oxen-pulled plough then using his own ox that had once been the inherited calf, he could utilize those to cultivate not only his own land but also other farmer's land, thus obtaining rental income. However, trying to forget hardship of his life, his second eldest brother drank more and more volume of spirits becoming bored with farming labor.

Mr. WT himself was apprenticed manufacturing of guitar keys without payment to the eldest brother after schooling at his primary school. Then, after dropping out of primary school at the 4th standard he began to work at his eldest brother with his third eldest brother. His mother kept household by vending housekeeping goods and also working as casual laborer. His eldest brother, directly delivering manufactured guitar keys to the clients in Yangon, began to indulge in gambles and spirit drinking that he experienced in Yangon.

Three years after Mr. WT initiated his work, his eldest brother fell into acute alcoholism drinking spirits by spending sales fund, and finally failed to purchase stock of processing materials due to short of fund. By this reason, Mr. WT and his third eldest brother purchased materials by borrowing fund from a relative of their father at an interest of 5%, and resumed again manufacturing guitar keys by rental lease of a lathe at night when no one uses it, while in the daytime finishing produce ready for marketing etc thus toiling for living unremittingly. They cleared all he debts 4 years later in 1985, which was one year later from their purchasing own lathe.

Formerly, guitar key manufacturers were aware of making higher profit only if they directly delivered their product to the clients in Yangon, but no one dared to do it because of lack of spirit to go as far as Yangon where no acquaintance lives. Mr. WT asked his eldest brother, the forerunner who put it into practice, to introduce the client in Yangon, thereby he could earn higher gain. Later on, the third eldest brother was responsible for manufacturing and Mr. WT was in charge of sales and marketing and they succeeded in raising their profits until their families could eat meats and fishes.

Mr. WT was 26 years old, in 1990, he advised his mother to resign from work and one year later he retrieved farmland which his father had owned before passing away. Owing to arable farmland increase, the second eldest brother stopped drinking spirits to fully engage in farming practices, thus they were able to obtain food for home consumption from farming run by him.

His family managed to create room for saving money by reducing cash expenditures for food owing to self production, and savings were made in the form of purchased pure gold because there is possibility of spending if they hold them in the form of currency notes. Mr. WT got married in 1992, when he was 28. In 2000, his family, once the poorest extremely, could hold a largest-scale donation

ceremony equivalent to 2,000 baskets of paddy at that time.

Since around 2002, Chinese product had penetrated Myanmar market of guitar key and this had narrowed the margin of Myanmar-made product down to 10% of the sales. In order to cope with this situation, he has opened a grocery store in his village and his wife has managed it. Customers of this store have mostly been causal laborers and craftsmen who buy goods by credit, but anyhow the profit from the store has reached equivalent to daily wage for a laborer. Also, he obtained 2 acres of fertile arable land by selling pure gold, which his elder brother cultivates now. He attributed his success in his own enterprise to his hard work without sleeping at night because he enjoyed making profits after his bitter experience of spending the poorest life in the village, also to timely grasping of chance that he could take, to the lesson from his eldest brother that led him to refrain from spirits and gambles, to mutually cooperative brotherhood etc.

Case 4: High quality, Trust esteemed attitude, Strong intension to success, Stable employment and Improvement of working environment

Mr. TN is a manufacturer of slipper aged 36 (as of 2007), or born in 1971, living in Ar La Ka Pa Village. According to him his parents were poor, so in his childhood he was sent as an adopted son to his uncle who ran processing of slipper, and made him a helper of slipper production when he was in the 4th standard (10 years old). When he grew up to the 9th standard (15 years old) he already acquired craftsmanship skill to manufacture the slippers alone.

After graduation from his high school completing 10th standard, he began fully assisting his uncle's manufacturing. He seized an opportunity of getting married in 2001 when he was 32 years old to become independent receiving a part of his uncle's work. His operation fund was quite scarce then, no place to live in nor to do work, he borrowed a room free of charge at his relative's home to start his work for manufacturing slippers.

He was allowed to use the same brand name of the slippers he produced as that of his uncle, and he began his work by manufacturing slippers for children. Since he couldn't make significant profit from slipper production during the period of establishing his work, he also made candles as a subsidiary vocation to supplement operation fund and living cost. Candle production couldn't be long sustained because the profit failed to meet the cost due to price escalation of materials.

He then decided to concentrate his efforts on his major vocation and analyzed his own situation, and then he came up realizing his potential ability in order to attain expansion of the business and maximization of its profit that 1) he was confident in the quality of the slippers he produced, 2) he had acquired trust in his business society, 3) however, operation fund available at hand was too short to expand his manufacturing work.

He devised an idea to utilize the former two of his advantages to a maximum extent. He asked various suppliers to wait the payment for materials until the produced slippers can be sold with conditions of exclusive contract with a single partner of material supply. Finally, he could succeed in closing contracts with one of his stock suppliers with whom he negotiated. Because ordinary slipper manufacturers purchase materials by choosing suppliers supplying them at lowest prices at the time of trading, the suppliers may be changed every single time and the necessity of advance cash payment arises from this type of trade. In his case, as he had very limited cash available to purchase materials, he couldn't adopt such system of advance payment. So, he proposed a condition to the negotiated supply partners that he wouldn't change the suppliers even if he expanded the scale of his slipper manufacturing and convinced them to settle bills after the sale of his products.

Yet, this idea had a drawback that the prices of purchasing materials tend to be higher as compared with other slipper manufacturers. However, it was rather economical for him than borrowing

operation fund with interest from others in order to settle bills with suppliers in cash. He managed to expand his business through this system for purchasing materials and for settling bills, and he created his own brand and diversified the kinds of his products and expanded the amount of production. He visited with his wife acquainted stores and succeeding in persuading them to display his merchandize on their front shelves, never adding big margin on the production cost, thus he could grow his sale in a short period.

He followed a policy of always keeping promises for avoiding loss of trustworthiness on his business, and he sustained his stance of respecting business contracts. This attitude enhanced his trust in his business society, and oppositely many material suppliers desired to send offers to him for their materials. Virtually, he could procure materials of slipper at cheaper prices than offered to the manufacturers paying in cash. Similarly, he asked craftsmen to manufacture slippers without any order based on his experiences of being himself an artisan, to stabilize their wages on a performance based rating system, consolidating an environment in which they can manufacture good products with ease.

He kept slippers manufactured in a stock until the season of concentrated orders, thus excluded poor working atmosphere of mobilizing craftsmen until late at night in the busiest period. Ordinary slipper makers usually adopt a system of driving craftsmen into work only when order is made, and this system leads to wider fluctuation in their wage. The order-based system provides cruel work condition for craftsmen, because it results repetition of the period of almost idling days and that of long continuous work days until late at night. Through such improvement, he succeeded in augmenting his own fund 100 times as much as the original level within a period of 7 years.

As regards the reasons of his success in his business, he listed up the followings: resolute mind of making success in enterprises because he failed to have high marks in his educational world, high craftsmanship in manufacturing slippers (he was rated superior among the craftsman group), attitude of attaching importance to trustworthiness never betraying clients and suppliers, attitude of seriously listening to opinions of multitude, ideas to overcome the shortage of operation fund etc.

Case 5: Independency mind nurtured in boyhood, small margin and high turnover, Cooperation by cousin sister

Mr. KW is an owner of a food grocery shop living in Ma Gyi Sauk Village and whose age is 39 (as of 2007) or born in 1968. When he was in the 2nd standard, he lost his father who was bitten by a poisonous snake and this made him withdraw from his primary school at the age of 11 and he started to work as a cowboy to cater for cattle of other farmers. His parents originally held some arable land, but lost all in 4 years after his father's death. Two years later, when he was 13 years old, he began working in a teashop run by a villager of his village with conditions of provision of sleeping place and meals, so he remitted all his earnings to the native household.

When he grew up to around 17 years old, a thought came to him to strike ruby mine in Moegoke, and this idea made him to return from Mandalay to his village and finally obtained the fund by working as a casual laborer after a year. Though he went to Moegoke, it was too difficult for him to discover ruby and it was also too toilsome work to obtain it. Thus, he gave it up after trying for three years and again returned to his village. In the village, he assisted his cousin sister who ran a food grocery store to sustain livelihood of himself and his mother.

After helping management of her store for three years, he went to Monywa where he worked in a teashop as a waiter and remitted a part of his income to his mother. Two years later, when he was 25 years old, he initiated a business of manual carriage by purchasing a trishaw that had a favorable reputation at that time among his group for earning lucrative income. He managed to amortize his

debt for trishaw within three months with favorable income, but he could save only little amount of savings because he spent much to play and to drink spirit with his business group members.

Later, he handed his trishaw to his elder brother and returned to the village. Then he started a money lending business to close a contract with poor farmers suffering from lack of cropping fund in manner of buying wheat from them before they cultivate it on their field, with financial assistance from his cousin sister. Through this advanced wheat purchase his operative fund increased more than four times as much as the beginning level for two years.

He married at the age of 28 using 80% of this income as dowry. After marriage he lived in his wife's house and continued business of advance wheat purchasing. At a time he cultivated farmland owned by the father of his wife, but as the family of his wife's elder sister was going to inherit the land, he switched his work to run a shop to sell "kwun yar" and could earn a substantial income. Thereafter, he purchased a second hand store and dismantled it and reconstructed it at his living site adding the part of residence where he opened a store selling not only kwun yar but also foods and routine groceries. While he ran the food and grocery store, he also engaged in various businesses including loan lending with interest asking mortgage of pure gold, advance purchase of various kinds of farm products not only wheat but beans and pulses and others. In 2003, 4th year after marriage, he held a donation ceremony by spending equivalent to 150 baskets of paddy.

Later, his wife fell sick but he managed to prepare treatment expense, and presently he smoothly continues his business. He analyses that his success has been brought about by: self-help spirit was nurtured to make strenuous efforts because there had been no one to rely upon since his childhood, lesson learnt in a town (Monywa) that led him to run a high-turnover business offering cheap priced goods with small margins, and availability of assistance from his cousin sister etc. Also, he considers allowing his children as decent education as possible, reflecting the fact that he didn't have enough opportunities of receiving education.

Case 6: Saving, Reproduction of cattle, Children's collaboration

Mr. AK is a farmer aged 68 (as of 2007), born in 1939, dwelling in Legaing Village. His parents were poor farm laborers. Though they had obtained 4 acre of arable land allocated through the government land reform, they sold all for their sustenance. He only commuted to a monastery and did not experience any formal education. Working as a farm laborer, he married at the age of 17, thereafter both he and his wife worked as farm laborers for 8 years.

When 3～4 years passed after his marriage, both of his parents passed away one after another, and a year after their deaths they purchased a cow by their savings, and initiated a business of reproducing and selling calves. Owing to this income he bought a plough for two oxen in the 8th year after marriage, and began cultivating leased farmland from other farmers. Although he had to pay tenant fee for farmland, this was better off than his previous period of farm laborer. Since around 1975 compulsory delivery quota of paddy to the government was imposed and his livelihood was affected by this imposition. Yet, as his children had grown up to working ages and helped his works, he didn't have to borrow money from others. He regenerated his cow for reproduction as need arises, and he sustained a part of his livelihood by producing calves from the cow.

Imposition of compulsory paddy delivery quota was later more reinforced and escalated to such an extent that military personnel invaded into individual farmers' houses to inspect storage of paddy. Such an escalated imposition made farmers reluctant to continue paddy cultivation, and in 1988 an old farmer living in the same village sold 10 acre of arable land he had owned to Mr. AK in exchange of a certain amount of paddy at several harvesting times. 1988 was the year of shifting into current political regime and compulsory delivery quota of paddy was suspended.

Thanks to that lift, he could own all his paddy harvests, and he could pay paddy for farmland purchasing in single year. From the following years compulsory delivery quota to the government resumed but the control was not so strict as experienced before. Since both he and his children can engage in farm practices, no need arose to hire farm laborers from outside. Their way of living was better off and a bit roomy, and in the subsequent year, around 1990, he held a donation ceremony. Thereafter, he started storage of harvested crop until market prices rise, and this business brought him better profit.

Later, he became a landowner with 20 acre in total by buying back farmland his parents had sold for settling their debts and purchasing other arable land. By 1995, at the age of 56, Mr. AK entrusted farming to his children and he only supervised it. After retirement from farming, he has continued to make profit from harvest storing business, appropriating it for rebuilding his house, construction of storage house, purchase of tractor etc, and still continue savings. When his second son married in 2006, he didn't hold wedding ceremony to save money. His comments on his success include striving for savings reflecting his experience of poverty, good luck, help of his children for farming etc.

3.3 Pit Fall Stories

Case 7: Partition of farmland for inheritance, Precept against killing creatures, Illness, Treatment cost, Wife's fecundity, Multiple debts

Mr. AW is a 37 years old (as of 2007) farmer born in 1970 living in Mingan Village. His father cultivated 5 acre of farmland and also was engaged in climbing up palm trees. He spent his younger age up to 8th standard in his village cutting roughage grass fed to cattle and helping his parents' farming practices etc. Later, he was sent to his uncle who ran an electric appliance store in Mandalay for staying and assisting store management in exchange for payment of school fee to commute to high school.

However, he encountered a closure of school from 1988 for about 2 years, failed to upgrade twice in his 2nd grade of high school education and returned to his village in 1992, and then he married in 1992 at the age of 22. After marriage he began to live in his wife's house and cultivate 11.5 acre of farmland owned by the parents of his wife. At that time his wife could not work outside for catering small children while his farming income was not enough for savings but his livelihood was not so hard as feeling difficulty.

One year after his marriage his father-in-law passed away, and 6 years later his mother-in-law fell sick, and he sold an acre of farmland for contriving treatment expenses in hospital. However, she also passed away after struggling for her sickness. According to her testament, 9 acres of farmland she left was divided into 3 acres for inheritance by her 3 sons and the rest 2.5 acre was shared by them. It was difficult to obtain enough income for sustaining a family by only 3 acres of land. To make the matter worse, mother–in-law had not accepted to sell her old draft cattle used for pulling a plough before she passed away (she hated to allow her draft cattle to be slaughtered for meat). This was the reason why he couldn't regenerate draft cattle, and he continued to keep only one draft cattle. He managed to use his plough for two oxen with the left draft cattle and another one own by other farmer by sharing plowing operation with another cattle owner. However, one year later he sold his old cattle that had been too aged to use for farming.

Later, he faced with such difficulty in sustaining his family, because his children increased to five, he had to ask food grocery to sell him food on credit. To repay his debt he consulted with the brothers of his wife and placed 1.5 acre of jointly owned farmland on collateral to borrow money, and he and his wife's brother shared it. Thereafter for a couple of years, he lived on farming and incomes from

casual labor, but due to acute shortage of livelihood he couldn't avoid buying food on credit during jobless period. In 2006 his wife fell ill after pregnancy, incurring treatment expense, he contrived to procure money for the payment by borrowing pure gold from his relatives and selling it without consent, but afterward the relatives came to know the fact, and they were convinced with his promise to never fail to return it in future.

After his wife recovered from her illness, he sold the jointly owned farmland to the person to whom he had placed it on mortgage and again shared the received money among three. He used his share for amortizing his debts in arrear but in the meantime he used it up for repayment. Later, he again borrowed pure gold from his relatives and used it to borrow money. Now he is suffering from a state of lacking of proper consideration on everything due partly to his acutely deteriorated livelihood, partly to fear of being prosecuted and arrested from his relatives who lent pure gold to him.

To a question asked to him on how he copes with further necessity of money in future, he only found two alternative measures, one to withdraw two daughters from school and send them for labor, the other to sell remaining farmland. He is now a multi-debtor who borrowed money from 3 different lending sources, out of which one is left outstanding the interest of which is in arrear since two months ago.

Case 8: Donation ceremony, Prosecution and detention, Wedding ceremony, Apportion of properties, Treatment cost

Mr. MT, aged 65 (as of 2007), born in 1942 is a farmer dwelling in Magyi Village. He has many brothers and all of them learned reading and writing in monasteries. He married at the age of 18 and began living with his wife's parents. He accumulated savings by cultivating 20 acre of farmland owned by his wife's parents and 2 acre given to him from his own parents as a wedding present, and he added newly bought 2 acre of farmland by his savings.

Besides, he purchased a loudspeaker to start lending business of this, the possession of which was considered at that time a status symbol of high-income earners. With a background of outstanding rich family in the village, he held a large-scaled donation ceremony at the age of 35 (1977) equivalent to 200 baskets of paddy, but just after that he was arrested and detained on account of quarrel with other villager and injured him. To settle the case an expense equivalent to 1.5 times as much as the paid expense for the donation ceremony was incurred to him. To contrive this expense, he sold 2 acre of farmland and pure gold.

Since his age of around 40, he sold his loudspeaker away because income declined from lending it. When he reached 45 years old (1987) a parent of his wife passed away and he received 10 acre of farmland as heritage. At this stage, what he owned was 12 acre of farmland and 6 heads of cattle. 2 years and 3 years later, his eldest son and his second son married respectively and he held magnificent wedding ceremonies in both weddings, thereby consumed all his savings.

Also, he gave 3 acre of farmland to his eldest son at the marriage and in the case of the third son, he transferred 2 acre of farmland and a cattle to the family of his son's bride, and in the case of the fourth son, he sold a cattle and made 3 acre of farmland and a cattle for betrothal gift. His third son fell sick just before the wedding and he had to sell a cattle contriving for his son's treatment. Eventually his son passed away but he failed to receive back the dowry he presented prior to the wedding from the bride.

When he was 61 years old (2003), his second son living together with got hurt in an accident, incurring heavy expense for treatment. As he didn't have available asset at hand, he contrived the expense by selling 3 heads of cattle and a bull cart. He also fell sick last year and sold one of the two draft cattle for pulling plough to meet treatment cost. Afterward he obtained two cows for dairy

purpose in exchange of 0.5 acre of farmland. In future he plans to deliver offspring and multiply dairy cows and eventually produce milk to restore current indebted livelihood. He attributes his impoverished livelihood to failure of his son's help for his livelihood because they get married and became independent soon after they started working.

Case 9: Donation of pagoda, Donation ceremony, Wedding ceremony, Apportion of properties, Welcome for visitors, Treatment cost, Farm management without knowledge and experiences

Mrs. CT is a farm manager who is aged at 76 (as of 2007), born in 1931, living in Khaungkawe Village and she once received education up to 3rd standard. When she was 15 years old she became an adopted daughter to her aunt living alone, and married at the age of 20 with a person working under her aunt as a farm laborer. Her aunt owned at that time 41 acre of farmland and 2 pairs of plough pulled by two draft cattle and accumulated her savings every year until Mrs. CT reached 30 years old. During the period between 30 to 40 of her age, she funded new pagoda construction in individual basis and held the first Buddhist initiation ceremony for her children as suggested by her aunt, and whenever she saved to certain amount of money she held donation ceremonies, thus she used to squander away huge amount of money.

Soon after that, her aunt passed away, and she contrived to arrange her funeral by selling an acre of farmland, and she inherited all the rest farmland from her. Out of the inherited farmland, she partitioned for her children's marriages, 1.5 acre for her eldest daughter's marriage, the same for her third daughter, 2.5 acre and one set of plough pulled by two draft cattle for her eldest son's, the same to her second son, and for contriving the cost of their wedding ceremonies she sold her farmland such 1.5 acre each for her eldest and second sons respectively, 2 acre for her fourth daughter, 1 acre for her third son. Thus, she sold totally 14 acre of her farmland on occasion of her children's wedding.

When she was 50 years old, or around 1980, her husband started to work for a leader of village cooperative, and completely absorbed in the work entrusting his farming to his children. This resulted in deterioration of crop harvests. In addition, most of visitors from other villages and the government hoped to stay in his house because he always had welcomed them and this incurred much expense as a matter of course. He fell sick in the meantime, and passed away in 1990 after rehabilitating period. She sold 2 acre of farmland to contrive treatment expense for him.

Later, her fourth son wanted to start manufacture of guitar key, and she provided fund for starting the business by borrowing money offering her farmland for mortgage. However, he passed away leaving huge debts and she had to sell 7 acre of her farmland for clearing them. Consequently, her household balance became negative and she had additionally to sell 5 acre of farmland to settle debts. 5 years ago or in 2002, she thought she couldn't get along only with farming and she purchased 2 dairy cows spending money obtained from selling 3 acre of farmland. This cow breeding, assisted by her youngest daughter, resulted that her herd presently increased up to 5 heads. She plans coming year to sell 3 heads out of her herd to retrieve the lost farmland. The youngest daughter who has tended her dairy cows married last year, but she failed to hold wedding ceremony for her.

She reflects her cause of downfall as: bestowing alms for her next life by always donating surplus money, decrease of crop yields due to ignorance of her children on farming knowledge and experiences, and bad luck etc. According to the interview, her family still owns 14 acre of farmland including that leased out, and 7 cattle including dairy and draft, but seems to spend an austerity life judging from the fact that she deposits from time to time her cloths and kitchen/ tableware to others to buy foods and medicines, she has not eaten meat for more than a year, she borrows money placing her youngest daughter's pierced earrings on mortgage to buy forage for cattle (lady's pierced earrings are religiously very important effects, which is put them on as the symbol of Buddhist at the first initiation ceremony).

Case 10: Respecting monk, Drinking spirits, Price escalation, Wife's fecundity, Treatment cost, Purity never suspicion

Mr. KS is a casual laborer born in 1949, or aged 58 (as of 2007), and he lives in Ar La Ka Pa Village. He commuted school up to 4th standard. His parents held 7 acre of farmland. When he was 10 years old, her mother lost eyesight and his family was worse off. This was the reason why he withdrew school at the age of 12 and became a monk. He devoted to monastic mortification until he turned 22. Then he unfrocked himself and returned home. Since he had been a monk, he was accepted in a reverent way to his family. As a result, he didn't do any labor work for two years until he married at the age of 24. Even after he married, he didn't work at all but drinking spirits and playing, completely depending on his wife's earning for about 5 years. In the meantime, his family had sold 4 acre of farmland for paying debts.

Meanwhile, his father died and he inherited 4 heads of cattle, but he consumed them in a short period by selling one after another every time in need of money. His family was worse off accompanying with the birth of his child and he had to earn by various works. He couldn't save money because he used to drink spirits whenever he received sizable income. In the meantime, goods price level escalated relative to his income (above all, price of rice upsurged about 5 times during the period from 1987 to 1988), leading livelihood to further worse off along with burden of feeding 7 children, to such an extent that his children were often not fed all day long, though he was drinking spirits and not aware of their hunger at all.

He and his wife strove for sustaining their income by undertaking firewood collection and vegetable vending during the idling time without casual labor, but they were trapped in a vicious circle of never getting rid of poverty stricken life due to fierce price rise compared to their income rise. As their 3 elder children married and left home soon after they grew up to their working age, they were not of any help for his household.

In 2000 or around, his brother-in-law was crippled and started to live with his family because no one else took care, and this worsened the degree of distress in sustaining his family. Recently, his wife has also fallen sick affected by past negligence of her health, or physical labor just after her delivery when was young, that annoys him at having to contrive to pay for her treatment. Recently, however, days without food disappear from his family because his 4th son has begun to work and help him sustain family. Also he is now able to buy food on trust from food groceries even without his own income because post-payment is possible whenever obtaining income.

The spouse consider following causative reasons of their painful life they have spent so far: because he was a monk in his early youth, he was ignorant about the way of farming, he never work until their living was really worse off, they couldn't save money consuming it for drinking while earning good income, his wife has carefree character free from doubting her own work, without any other idea than casual labor she initially engaged in, price has been rising from the past and relative to wage increment (once per diem income was equivalent to 10 kg of rice but now to only 2.5 kg) etc. On the other hand, villagers deem they brought too many children as compared to available food, but there is also a reputation that Mr. KS is a man of carefree, making no bones on the trifles, always comfortably and cheerfully working.

Case 11: Donation ceremony, Erratic climate, Labor shortage, Treatment cost

Mr. MN is a casual laborer, aged 65 (as of 2007) born in 1943, living in Ma Gyi Sauk Village and learned how to read and write in a monastery. His parents were of rich farmers, and when he married, he received from parents 5.5 acre of farmland and a set of plough pulled by two oxen. He could save money by cultivating pigeon pea, chick pea, wheat etc on the received farmland. He held a splendid

donation ceremony equivalent to about 200 baskets of paddy in the 7th year after his marriage, but he made a debt due to too magnificent ceremony. It took him two years for paying it back, and it made his matter worse that unfavorable weather prevailed the subsequent years and resulted obtaining poor harvests. Both of the spouses strived for farming but failed to create savings, thus their indebted livelihood became chronic borrowing money prior to cropping and pay it back double in kinds of his harvest.

His sons never assist his farming and reaching their workable age they soon married and became independent. For this reason his family fell into a vicious circle in which labor force within his family had always been in short and this brought unfavorable harvests, and finally Mr. MN felt reluctant to continue farming. In 1987, since a part of pagoda compounds in his village was washed away by a flood, villagers had to move the pagoda to another place, and he was requested from the villagers to contribute his land to settle the pagoda. He received a substitute land in other place but he sold it away to pay back debts and to supplement his living expenses. Because a set of plough pulled by two oxen was still left at hand, he worked with this as a farm laborer. However, when his wife fell sick in 1994, he sold the set of plough with two oxen for contriving remedial fee. Since then, he became a casual laborer, again returning to chronic indebted life.

He attributes his poverty to his unreliable and uncooperative children on the contrary villagers comment on him that he became poor due to his donation ceremony without considerate accounting.

Case 12: Donation ceremony, Compulsory paddy delivery quota, Cropping order by the army, Farming guidance by MAS, Insufficient farming successors, Education fee, Pride in past riches

Mrs. SY is a lady aged 80, living in Legaing Village, where she was born in 1927 (as of 2007). In 1947 she married with only son of a farmer who held 25 acre of farmland and initiated her life with her mother-in-law. His husband cultivated land with a resident farm laborer at his house and held two sets of plough pulled by two oxen. He also owned 5 heads of dairy cows and the couple continued decent living for 17 years until mother of her husband passed away. Her family held a largest-scale donation ceremony on the village as a rich family and also treated villagers with plush food on the occasion of family members' birthdays, new-year day, after the harvest and particular full-moon days etc. In most donation ceremonies held in her village, other villagers would contribute to the hosts to alleviate burden of the hosts, but in her family's case nothing was received from them.

Besides receiving a lot of gold/ silver and jewelry from the parents of her husband, the couple created their savings by purchasing pure gold spending their income. She never asked her children to assist farming, let them commuting to school in township giving bicycles made in England, the dearest ones at that time. When she was 37, in 1964, her mother-in-law passed away and her couple inherited all of the heritages.

Thereafter, since around 1967 the government started allocation of paddy delivery quota to village farmers, and her family was reinforced to deliver strictly with special notice by the authority because of an ownership of vast farmland. Even during period in which her husband grew too old to work hard, or when harvest was little heavily damaged by pests and diseases or due to erratic climate, no alleviation was made for the quoted delivery, and they had to offset the deficit by purchasing paddy in the market after procuring their portion of own consumption and seed, which the paddy cost more than 8 times as much as the received price from compulsory quoted delivery. They contrived money for purchasing paddy by selling their owned dairy cows, pure gold, jewelry etc one after another.

As such, since rigorous environment prevailed in farming management, her children haven't been interested in farming. Also, the couple didn't have their help with their farming despite her husband became too old to do farming, only she and the resident farm laborer were engaged in farm

management. Later, as her aged husband could not continue farming practices any more owing to senility, she entrusted farming to her relatives receiving tenant fee from them. Due to this transfer, her family was no more well off than they had formerly been. She managed to meet school fee for her children by selling jewelry, and she held the first Buddhist initiation ceremony in a large-scale for her 4th and 5th sons without receiving any contribution from others. Later, she spent her life until over 60 by selling pure gold etc she had stored.

In 1990, she held her final donation ceremony at the age of 63 by selling jewelries. Thereafter, she sold one set of her ploughs pulled by two oxen because she didn't have farm labor and keeping draft cattle incurred fodder costs etc. In 1991, she was ordered by the army to cultivate chickpea but she failed its harvest due to insect damages. So, she had to deliver chickpea by releasing all her jewelry and pure gold and buying it in the market.

Simultaneously, MAS had guided her to cultivate paddy under direct sowing, but she failed to harvest. As a result, she obliged to sell her farmland for paying debt. She fell down to a situation of selling her farmland every year and in 2001 farmland left at her hand decreased down to only 5 acre. In the same year, she had once cleared off all her debts by selling away the final set of plough with two oxen, but soon after that she again borrowed money because her livelihood was still worse off.

Mrs. SY always considered not borrowing money as far as possible, and she sold 2 acre of farmland to pay back her debts. Later, she again sold one acre leaving only 2 acre at present. She deems as the causes of her family's decline from formerly well off situation to currently impoverished one are due to investment of her properties to her children's education in contrast to her own lack of educational background, huge economic burden to feed up all 8 children up to their marriage and independence and also her bad fate etc. She longs for nullifying all her debt before passing away.

3.4 Indications by the Stories

The results of the interview towards 36 respondents contain stories common in every country, rather difficult to say that they are typical ones confined to the CDZ. Regardless of whether these people may succeed or fail, we can understand the causative factors leading to the given results are generally found everywhere. Meanwhile, it can be said the typical character lying in the CDZ that the same cause results widely erratic outcomes which can specifically be observed in the CDZ.

For example, as natural condition, e.g. rainfall, is very erratic, one may fall in a pitfall should he make a mistake in investing his agriculture. Areas endowed with enough and stable rainfall and to a great extent with irrigation facilities, one may expect return always as planned while in CDZ the end is not like that. Under stable environmental condition, timing of sowing has same tolerance while in CDZ it is not. When one sow seed in not appropriate time, he would easily lose the total investment, resulting in little or even no-harvest and thereby falling in debt.

Above situation can be found in cottage sector as well. As the natural condition is harsh, they have to depend on outside for their raw materials. Little or almost nothing can be produced in CDZ as long as raw materials are concerned. Thus, they cannot grow their cottage industry to some scale or rather remain in small scale all the time. This situation easily makes them vulnerable when a market situation varies to negative side.

Summarizing the interview results for the 36 respondents, the plausible key points have been mentioned following the case number of each personal history. If these are taken out to tabulate, the following result is obtained:

Table 3.4.1 Points extracted from success stories and pit fall ones

Division	Key Point
Successful Career	Purchase of pure gold, saving, pioneer spirit, information collection, diversified income sources, multiple management; farming + livestock + small-scale industries, health, bottommost experiences, learning opportunity on a man of bad example living around, the unforgettable rejoicing of first profit, brotherhood solidarity, high quality, trust-esteemed attitude, strong intension to success, stable employment and Improvement of working environment, independency mind nurtured in childhood, small margin and high turnover, cooperation by cousin sister, reproduction of cattle, children's collaboration
Pit falling Career	Parceling of farmland for inheritance, **precept against killing creatures**, illness, treatment cost, wife's fecundity, multiple debts, **donation ceremony**, prosecution and detention, wedding ceremony spending much money, apportion of properties, **donation of pagoda**, welcome for visitors, farm management without knowledge and experiences, respecting monk, drinking inhabit, price escalation, purity never suspicion, erratic climate, labor shortage, **compulsory paddy delivery quota prevailed before 1988**, **cropping order by the authority**, **farming guidance by the extension authority**, insufficient farming successors, education fee, pride in past riches

Firstly, as to successful careers, no one would guess the country should be Myanmar only observing key points in this table. Even if someone told these were the stories in Europe or in the United States, no one would suspect it. In other words, not only human efforts but their conditions and circumstances leading to successful business may be universally the same. It is reasonable to consider that those who have acquired a success can achieve it through both relevant ideas that fit the business environment and good luck. Everybody has potential to make it a success, but it would depend on individual capacity whether he is capable of turning his potential into a real success or not. On the contrary, in order to reduce poverty, it would be more important to create a situation immune to stumbling on an adversity.

The underlined items within the key points in pit falling careers seem to be typical causes happening exclusively in Myanmar. The reason why these underlined items do not appear in the successful career is expected that the success as mentioned above may lie in higher universality of favorable conditions as stated. Vice versa, if one can point out Myanmar's specialty in the key points of success stories, it has a great potential to extend with unsurpassed velocity. The basic reason of such extensibility resides in that such a specialty consists of the base of local cultural background, hence it would be the most familiar to those who share such behavior.

In this context, the underlined items in the column of pit fallen career for the most part relate to religious events and the government (past) policies. To link these items with lessons learnt would not be appropriate since it may criticize religion etc, but it is sure that these fostered to trigger pit falling processes. On the contrary, why the items other than those underlined, namely not typical causes in Myanmar account for majority in pit falling career? This may be attributable to that what happens everywhere as a human action pattern would more adversely affect villagers' life sensitively in the CDZ. In the case of CDZ, farmland and other production bases are vulnerable and climatic vagaries take place fiercely, where once individual management stumbles it will result in far negatively fluctuated outcomes than the impacts observed in other areas or countries with more stable natural conditions.

During the interview survey carried out this time, the Study team could get access to some images that the respondents deem as typical character of Myanmar people, such as "many Myanmar people can tolerate poor career, but there are many who spoil their careers once they become wealthy", "many farmers are fond of indulge in playing and during off-season (mainly around pagoda festival) many of them sell off even their seed to be sown on their field in order to get money for spending in the pagoda festival" and "whenever money is earned it is contributed as alms, and then it is consumed up people accept spending austerity life." Such a typical feature would often lead to tragedy of poverty without any deposit or saving because rigorous climate sometimes allows to bring favorable crops at maximum

a few consecutive years and also to bring poor harvests for long consecutive years on the particular occasion with their optimistic nature ignoring savings or food security storage.

Because of the above-cited reasons, it cannot help commenting it highly risky to contribute savings as alms at a time obtained from a few consecutive bumper years. However, no one persuades others to control alms and contributions. Here, it would be more desirable only to give hints so that farmers can create their safety net wider than ever practiced by explaining to them taking an actual instance of highly fluctuating annual rainfall, the risk of occurring absurd climatic vagaries after enjoying favorable climate for a couple of years.

Besides, need would arise to call for reserves in preparation for unforeseeable disastrous occasion as to escalation of medical treatment costs that quite possibly becomes a trigger of stumbling alongside with alms, by comparing the levels of per-diem wages of farm labor and medical treatment fees. Summarizing the results of the interview, nowadays it is necessary for farmers to pay at least equivalent to wage for 74 days of farm laborers if one stays once in hospital as in-patient as shown in Figure 3.4.1. By exemplifying such cases, possibility would be implanted to enhance incentives oriented to savings in preparation for emergency cases. Likewise, as for education fee incurred for schooling of children, it is desired to show how much expense is needed for meeting educational requirement, implying importance of planning a family plan and put it into practice.

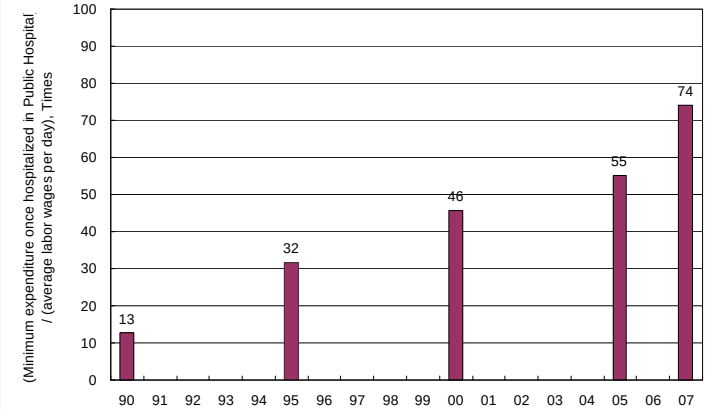


Figure 3.4.1 Increase of ratio between minimum expenditure of a hospitalization at Public Hospital and Daily Wage of a Farm Labor

CHAPTER 4 POVERTY & DEVELOPMENT IN REGIONAL SETTINGS

This chapter discusses the poverty and development of the CDZ in comparison with the Union from different aspects, and then further compares the status of the Union with development indicators of ASEAN countries. By doing so, one may know where the CDZ is positioned in the settings of the Union and again the Union in the broader spectrum that is ASEAN.

4.1 Indicators of the CDZ in the Union's Settings

Indicators such as land area and population, agriculture and livestock which are the major livelihood in rural people, and health and education are compared between the CDZ and the Union.

4.1.1 Land Area and Demography of the Study Area in Myanmar

The Central Dry Zone falls within 3 divisions - Mandalay, Sagaing, Magway. Table 4.1.1 shows the land area and population of these 3 divisions and the CDZ, the Study Area, in contrast with the Union. These three divisions account for 26% of the total area of the Union and 34% of the national population. The CDZ, the Study Area, within these 3 divisions accounts for 43% as to land area and 54% as to population, while its share to the Union is 11% of the land area and 18% of the population:

Table 4.1.1 Land Area, Population and Population Density of the Study Area and 3 Divisions (as of 2003)

Division/ State	Area, sq.km	Area ag/ Union, %	Population '000 in 2003	Pop. Ag/ Union, %	Pop. Density per sq.km	Remarks
Sagaing Division	94,582	14	5,777	11	61	
Mandalay Division	37,008	5	7,407	14	200	
Magway Division	44,801	7	4,976	9	111	
Total of Above 3 Divisions	**176,391**	**26**	**18,160**	**34**	**103**	
Kachin State	89,003	13	1,393	3	16	
Kayah State	11,728	2	301	1	26	
Kayin State	30,370	4	1,607	3	53	
Chin State	36,004	5	502	1	14	
Tanintharyi Division	43,328	6	1,490	3	34	
Bago Division	39,387	6	5,420	10	138	
Mon State	12,292	2	2,735	5	223	
Rakhine State	36,762	5	2,968	6	81	
Yangon Division	10,167	2	6,188	12	609	
Shan State	155,734	23	5,142	10	33	
Ayeyarwady Division	35,123	5	7,318	14	208	
Union	**676,288**	**100**	**53,224**	**100**	**79**	
CDZ (Study Area) only						
Sagaing Division	21,352	3	3,071	6	144	
Mandalay Division	17,398	3	2,882	5	166	
Magway Division	36,419	5	3,889	7	107	
Total of Study Area	**75,169**	**11**	**9,842**	**18**	**131**	
Ratio b/t SA and 3 Divisions						
Sagaing, %	23		53		2.35	
Mandalay, %	47		39		0.83	
Magway, %	81		78		0.96	
Whole Study Area, %	**43**		**54**		**1.27**	

Source: Myanmar Agricultural Statistics, 2006, Statistical Yearbook, 2004

From these figures it is found that both 3 divisions and the CDZ have larger share of population rather than share of land area against whole Union. Hence it can be said that the concerned 3 divisions and the CDZ belong to an area of higher population density in the Union. As shown in Figure 4.1.1, population density of the CDZ stands at 131 persons/km^2 as compared to that of the whole Union; 79 persons/km^2, also in comparison with the concerned entire 3 divisions of 103 person/km^2. One of the reasons of relatively high population density may lie in the favorable living

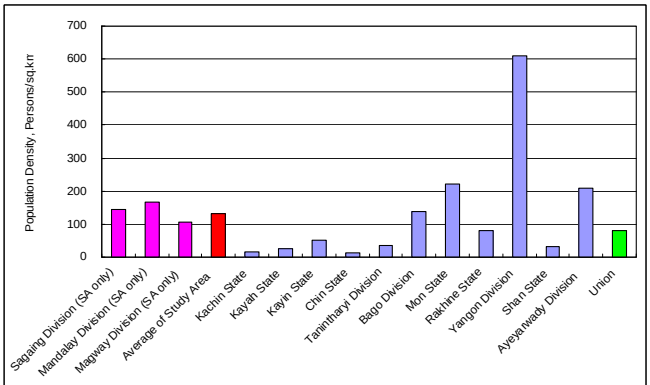


Figure 4.1.1 Population Density of the Study Area and Other Areas

environment of the CDZ with larger portion of flat alluvial zone as compared to western, northern and eastern areas that accompany with mountainous areas.

4.1.2 Agriculture in the Study Area in Comparison with That of Myanmar

The mainstay of the inhabitants in the CDZ is agriculture. Though in many cases goats/ sheep are raised in the areas, such livestock rearing is placed as complementary means to the mainstay, cropping activities. Agriculture in the CDZ is roughly divided into two categories if overviewed from the aspect of natural conditions. One of them is an extensive upland farming mostly seen in Bago Hills. Here, relatively drought resistant crops such as pigeon pea, sesame, sunflower, groundnut etc. are cropped on infertile sandy soils developing over gently undulating, or rolling hill relief. The CDZ is almost flat except the part of Bago Hills. In this area, different types of agriculture can be observed ranging from intensive farming developed on fertile soils distributed along Ayeyarwady River to extensive one engaged around Bago Hills.

Although the CDZ is called "dry zone", it has already created its position as a key upland agricultural production area of the Union. As it is difficult to obtain specific data confined to the CDZ for crop production, share of crop production between the total of 3 divisions including Mandalay, Sagaing as well as Magway and that of the Union are summarized in Figure 4.1.2 (Myanmar Agricultural Statistics, 2006).

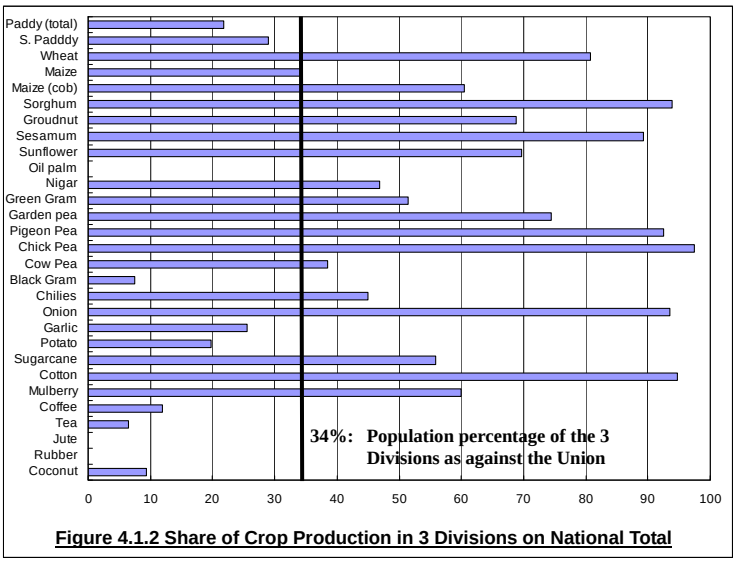


Figure 4.1.2 Share of Crop Production in 3 Divisions on National Total

The total population in these 3 divisions accounts for 34% of national total. From this Figure 4.1.2, it is evident that such crops as oil palm, black gram, coffee, tea, jute, rubber, coconut have inferior production share to the population ratio on account of climatic conditions. However, many other crops show by far higher share as compared with demographic ratio. Also, it is really amazing that paddy production in terms of total of rainy season crop and dry season crop in this area has share of 22%, and that in terms of only dry season crop (irrigated one) has share of 29% on the national total. In addition, this area is known as a production area of oil-crops and pulses, where production share reaches 70 - 90% in the case of oil-crops and around 40 to over 90% in terms of pulses except for black gram that is produced in the delta.

"Dry area" as it may be called, a lot of paddy parcels can be observed in swampy lands and along streams in the CDZ. Paddy tracts equipped with irrigation facilities also widely develop along the tributaries that are flown into Ayeyarwady River, where intensive paddy farming is practiced. Further, such cash crops as pulses, oil-crops, and onions are widely cultivated in the CDZ as the production share stands at 94% as the share of 3 divisions versus national total. In fact such crops are not physiologically apt to humid climate but to dry zone. Thus, the CDZ forms a large agricultural zone in the Union.

4.1.3 Livestock in the Study Area in Comparison with That of Myanmar

The CDZ has been known as livestock production area in the Union. Draft cattle, indigenous cows, hybrid dairy cows, sheep and goats suitable for dry zone climate, and also some fowls are reared in the

CDZ. Indigenous cows for producing regenerated draft cattle and hybrid dairy cows for milking are also fed in addition to draft (castrated) cattle. Besides, as minor species, pigs, fowls, chicken, ducks and quails for producing eggs are observed. Figure 4.1.3 shows the percentage of livestock in the 3 divisions against those of the Union. Population in the 3 divisions consists of 34% of the total population of the Union. Those livestock more than the percentage of the population are cattle, and sheep and goats while pigs and poultries are more or less same as the percentage of the population.

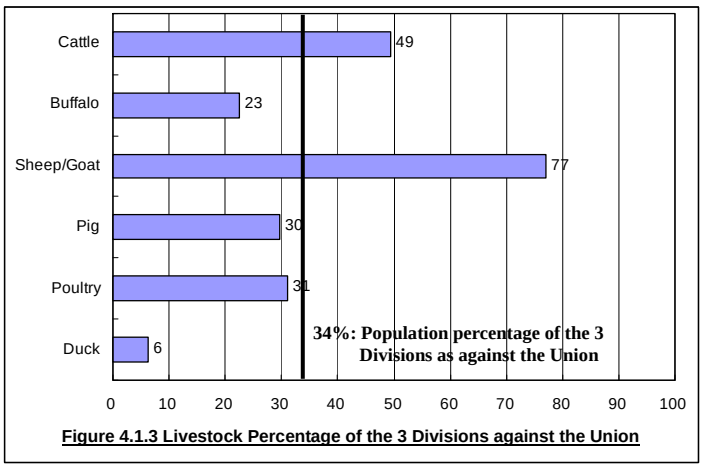


Figure 4.1.3 Livestock Percentage of the 3 Divisions against the Union

Cattle rate in the CDZ is 49 % that is more the population share of 34%. This is mainly because draft cattle are prerequisite for tillage and transport in upland as well as in paddy land for those who do agriculture as their mainstay because in this Country little farm mechanization has taken place so far. Sheep and goats are much more existing in the CDZ as posed at 77 % against the population share of 34%. This is simply because of their nature adjustable to dry land climate.

4.1.4 Health Indices of the CDZ in Comparison with Those of Myanmar

Figure 4.1.4 shows the ratio of malnutrition child (rate of weight against height) collected at TS level in 3 Divisions in the Central Dry Zone as compared to the national average in Myanmar. Here, the equivalent figure for national average is taken from the data of 2003 in Statistical Yearbook 2004, while those in 3 Divisions of the Central Dry Zone were as of 2004/05. Although the years referred to differ, the ratio of malnutrition child in the CDZ is judged slightly lower than the mean ratio of national level.

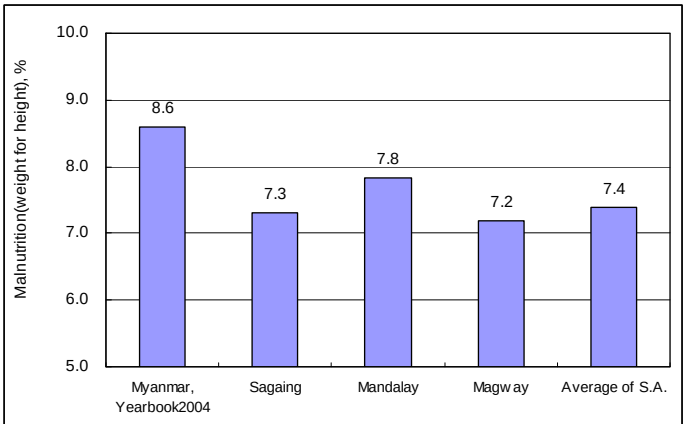


Figure 4.1.4 Rate of Child Under Nutrition under 5 Years Old

Figure 4.1.5 compares rates of infant mortality and that of under-5 year child collected at TS level within the 3 Divisions of the CDZ with that of the average in Myanmar (the rate is presented as per 1,000 live births). The data by UNICEF in 2004 as well as those in 2003 by the Statistical Yearbook 2004 are taken for the average in Myanmar and 2004/05 data are used for mortalities in the CDZ. Though the years of data collection differ, it is found from this comparison that the

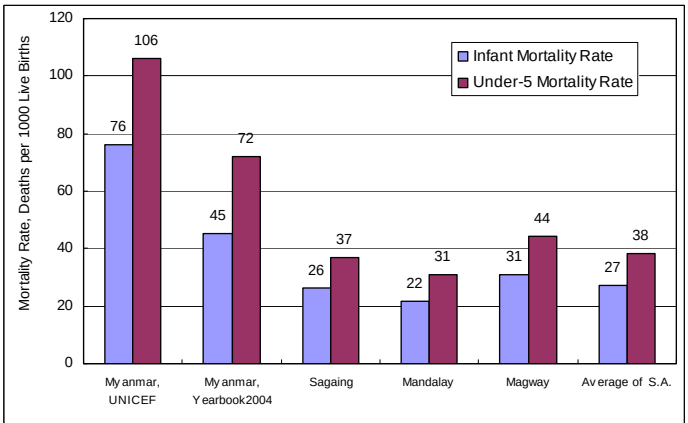


Figure 4.1.5 Rate of Infant & Under 5 Mortality Rates

rates of infant and under-5 year child mortality in the CDZ are by far lower than the national averages. For example, while the rate of child mortality under-5 is averaged at 106 per 1,000 live births for a national average (value reported by UNICEF) or 72 per 1,000 live births (value reported in Myanmar Yearbook 2004), those in 3 Divisions in the CDZ range 31 – 44 only, with the mean of 38 per 1,000 live births.

The rate of infant's under-nutrition mentioned above gives slightly lower value for the CDZ as compared to the national average, but the mortalities of infant and under-5 year child show by far lower level for the CDZ than that of the national average. Conceivable reasons for this difference may lie in well-managed care for infant health including immunization reflecting higher status of women, as well in a favorable environmental condition of dry area for health management.

The rate of access to immunization in the CDZ is even higher among the areas of Myanmar where political importance has been attached to health care for mother and children. Viewing, for instance, the rate of immunization in 2007 by the Rural Health Centres covering 6 target villages of the Pilot Project commenced in 2007/08, they show high value of over 80 - 100%. Besides the preventive vaccinations, endemic and epidemic diseases and those contagious sicknesses are less prevalent in dry areas where hygienic conditions are naturally better prevailing than high humid areas. These conditions are interpreted as major factors that lower infant & child mortality rates in the CDZ.

Table 4.1.2 Rate of Immunization in Rural Health Centers covering the Target Villages of the Pilot Project in 2007

Village	Division	Population Covered	Immunization by Type					
			BCG	DPT	OPT	HP.B	Measles	Tetanus
Khaungkawe	Mandalay	6,347	80	99	100	100	54	98
Magyi		19,254	100	100	100	100	100	100
Ma Gyi Sauk	Sagaing	28,112	94	91	91	91	93	91
Ar La Ka Pa		37,757	104	108	104	104	100	103
Mingan	Magway	27,662	99	97	97	97	97	99
Legaing		24,349	85	87	87	89	91	79

Source： Collected by the Study Team directly from the health centers covering the target villages of the Pilot Project（figure in 2006）

As generally observed in Bamar race, gender difference is not much. It is generally mentioned elsewhere that women of Burma race dominant in the CDZ have a high social status. High social status of women results in generally lower rate of occurrence of under-weighed infants or malnutrition infants. This is because that mothers tend to have more room for regarding their children's health (see box as an example in India). Also, it will lead to longer life expectancy because such care allows to lower infant mortality and mortality of child younger than five years old regardless of infant's sex. So it can be deduced that where women's status is high favorable environment has been developed in which subjective participation of women can readily be realized particularly in promotion of social development oriented activities, e.g. in the fields of health.

Kerala Province where Woman Status is High:

A.Sen and Martha C. Nussbaum often refer to high educational or health indicators of women whenever they argue potential capacity building approach. India is a country where demographic rate of women has never exceeded 1 ever since statistics were initiated in early 20th century, also where discrimination of girls and ladies is said to be serious.

However, amongst such discrimination, Kerala State has higher female ratio and achieved favorable social indicators for women. Here in Kerala State, since medieval age a tradition of matriarchal inheritance has rooted because male laborers seasonally leave their villages. Until 17th century, polygamy with husbands had at times been practiced. Thus, women's status in this State was traditionally high and this has fairly fostered the achievement of high social indicators

Development as Freedom, A Sen, 2003,

Women and Human Development, M.C. Nussbaum, 2000

4.1.5 Education Indices of the CDZ in Comparison with Those of Myanmar

Figure 4.1.6 shows the adult literacy ratios collected at TS level within Mandalay, Sagaing and Magway Divisions with that of the average in Myanmar[1]. The ratio of Myanmar is 86% for female

[1] UNDP Human Development Report 2006

and 94% for male with an averaging to 90% as of 2004. On the other hand, literacy ratios in the CDZ by division are 99%, 96%, 95% for Mandalay, Sagaing and Magway Divisions respectively as of 2005/06. Unfortunately, literacy ratio by sex in the CDZ is not available, but it can be said that the literacy ratio in the CDZ is fairly high, and higher than that of the Union.

Table 4.1.3 shows education indices of 3 Divisions of Mandalay, Sagaing and Magway in comparison with the Union[2]. Viewing the table, not much difference between the 3 divisions and the Union is seen but in some indices and in divisions lower performance exists as compared to that of Union. For example, gross enrollment ratio of Sagaing Division has been decreasing to a low level of 68% in 2005/06 whereas the national average was 89%. Entry ratio to high school for Mandalay and Sagaing Divisions are also lower than that of the Union; 74% for Mandalay and 80% for Sagaing as compared to 93% of the Union.

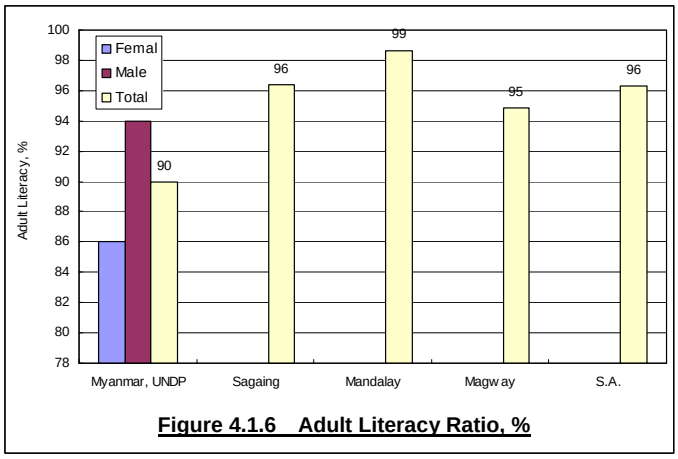


Figure 4.1.6 Adult Literacy Ratio, %

Table 4.1.3 Education Indices of the 3 Divisions as compared to that of Myanmar

Particular	Academic Yr	Mandalay	Sagaing	Magway	Myanmar
Completion Ratio of Primary School (1st – 5th grade)	2003-04	71.0	71.6	71.8	69.8
	2004-05	73.5	69.4	68.2	69.8
	2005-06	71.0	66.8	69.0	69.8
Gross Enrollment Ratio of Primary School	2003-04	84.6	77.6	90.4	89.8
	2004-05	91.6	74.7	89.0	88.5
	2005-06	80.1	68.5	89.1	88.7
Entry Ratio of Middle School (6th – 9th grade)	2003-04	61.4	50.2	68.1	71.6
	2004-05	62.9	70.5	79.8	73.5
	2005-06	66.9	71.5	74.7	73.3
Gross Enrollment Ratio of Middle School	2003-04	40.4	35.8	40.1	44.4
	2004-05	40.9	36.3	40.0	43.5
	2005-06	41.4	46.6	43.8	45.9
Entry Ratio of High School (10th – 11th grade)	2003-04	89.3	94.0	94.2	92.5
	2004-05	82.2	82.1	96.2	93.0
	2005-06	74.4	80.0	94.9	93.3
Gross Enrollment Ratio of High School	2003-04	31.0	23.9	24.9	30.2
	2004-05	28.4	24.1	25.8	29.7
	2005-06	29.6	30.8	30.1	30.3
Percentage of Students Who Have Passed the Final 11th Standard	2003-04	89.4	87.1	85.2	93.7
	2004-05	94.5	87.1	97.1	95.1
	2005-06	97.7	91.6	96.5	94.2

Source: Ministry of Education, Headquarters, Nay Pyi Taw

Given the high literacy ratio in the CDZ as compared to that of the Union, one may think education indices should also be better than the Union. However, the table shows not better performance as compared to the average of Union or in some cases even lower performance can be seen. The reason is not clear, however one possibility may be associated with the number[3] of the children whose ages

[2] For the education system in Myanmar, primary education is between 1st grade – 5th grade, middle education is 6th – 9th grad, and 10th – 11th grade is for high education (thereafter, college or university). Compulsory education is only for the primary education. The age for entering the primary education should be at least 5-year old and therefore at the age of 15-year old one may graduate the high education if the one passes all grades straight. At the age of 16-year old, one may enter college or university.

[3] In Myanmar last census was carried out back in year 1983, since then population by age group has been estimated by applying a constant growth ratio. If the birth rate has been declining in the CDZ where Bamar race is predominant, enrollment ratio could be underestimated (if number of children whose age is in school is overestimated, it gives lower

are in the respective school age group because no census has been carried out since 1983. Not much confident but at least we may say that the literacy ratio in the CDZ is fairly better than that of the Union and education indices are not worse than that of the Union except some.

4.2 Indicators of the Union of Myanmar in ASEAN Settings

The Union of Myanmar joined ASEAN on 23rd July 1997. ASEAN aims at development of economic as well as social base of Southeast Asia. Partly affected by economic blockade from Western nations, most of external trade of the Union is with Asian countries. In addition to China and India, the Union has traded with ASEAN countries including Thailand, Malaysia and Singapore. In this section, various indicators of the Union are compared with those of other ASEAN members to elucidate the position of the Union among ASEAN members.

4.2.1 Comparison on the Scale of Population and Economy among ASEAN Countries

According to the basal data on the Statistics of ASEAN Economy[4], Indonesia has the largest population among ASEAN members (about 230 million estimated as of 2008), while the Union has the scale of population following the Philippines, Vietnam and Thailand (refer to Figure 4.2.1).

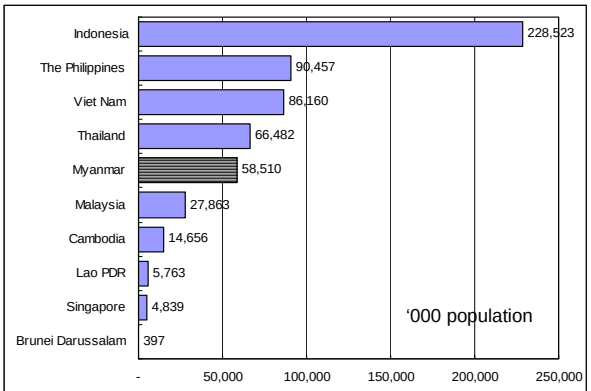


Figure 4.2.1 Scale of Population in ASEAN Countries, estimated as of 2008

Figure 4.2.2 shows GDP of ASEAN members estimated as of 2008, in which the Union has larger economic scale than that of Laos, Cambodia and Brunei, but fairly smaller than those of other 6 countries. GDP of the Union is equivalent to 1/3 of Vietnam, and to about 1/19 of that of Indonesia with the largest GDP among ASEAN member countries.

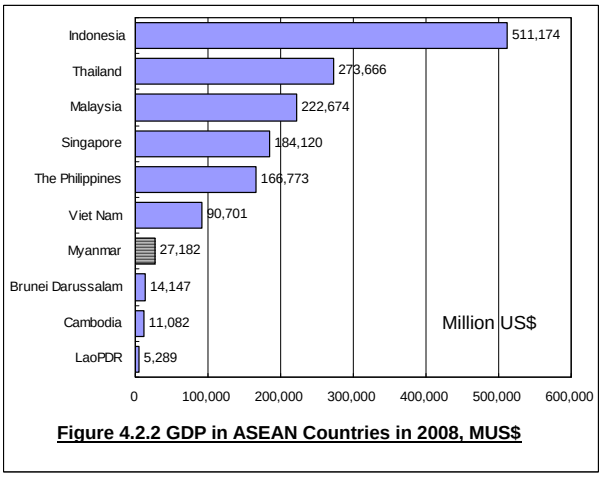


Figure 4.2.2 GDP in ASEAN Countries in 2008, MUS$

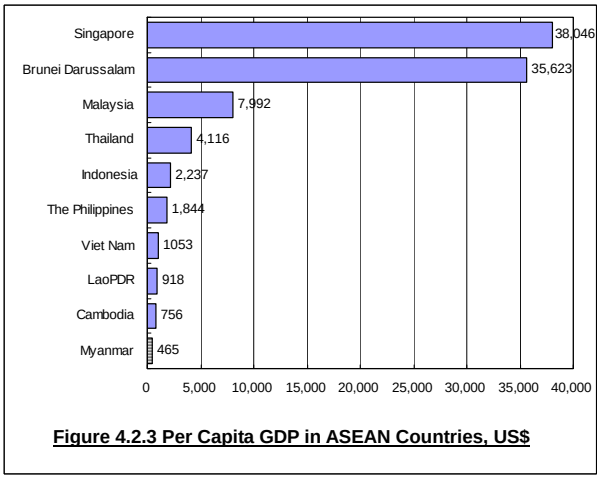


Figure 4.2.3 Per Capita GDP in ASEAN Countries, US$

As a result, as shown in Figure 4.2.3, GDP per capita in the Union becomes much smaller, ranked at the lowest level among ASEAN members with per capita GDP estimated at only 465$ as of 2008. In this regard, though it is argued that border trades are not precisely reflected in the statistics in the economy of the Union, limited economic scale is self-evident taking into account the big scale of population against rather smaller GDP irrespective of the size of border trade.

enrollment ratio than the actual one).

[4] ASEAN Finance and Macroeconomic Surveillance Unit (FMSU) Database, 2009 ASEAN, Statistical Yearbook 2008, etc.

The Union of Myanmar and Thailand, the former being adjacent to the latter at its eastern border, had been alike in population and GDP until late 1950s. Whereas, at present wider disparity has grown between these two countries in the economic scale though scale of population is still comparable each other. Thailand has larger population than the Union by 14% only while it has GDP of 10 times as much as that of Union, thus large disparity in GDP of the both countries is resulted as shown by 9 times difference in terms of per capita GDP. Although extent of poverty cannot be measured by economy scale alone, the way of disparity emergence may radically be related to economic policies of both countries.

4.2.2 Contribution Share among 3 Major Sectors to GDP in ASEAN Countries

Figure 4.2.4 indicates share of GDP among 3 major sectors (service sector, industry and agriculture) in ASEAN countries in 2000[5]. Among ASEAN members, Laos has highest share of agricultural contribution to GDP, followed by Myanmar. Cambodia has also high share of agriculture on its GDP. These three countries are in fact typical agricultural countries as shown in the figure, in contrast to other ASEAN countries where industrialization has fairly been progressed. Even in Viet Nam that followed market oriented economy relatively later than other ASEAN countries, share of agriculture on GDP has been declined to 23% as of 2000. Thailand, one of neighboring countries of the Union, has only 10% of agricultural sector contribution to GDP.

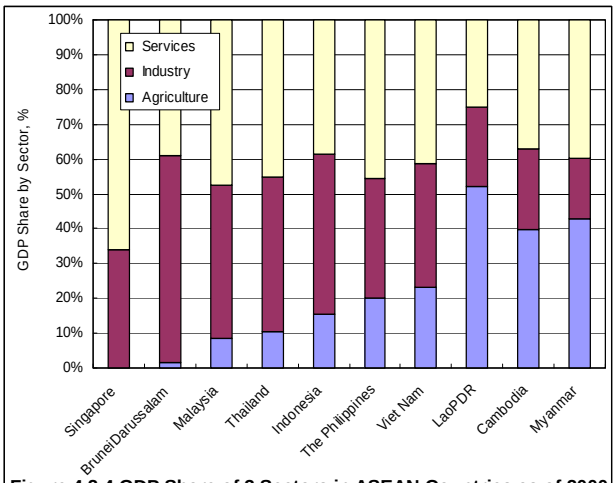


Figure 4.2.4 GDP Share of 3 Sectors in ASEAN Countries as of 2000

4.2.3 Human Development Index of ASEAN Countries

Human Development Index (HDI) is the indicator measured by 3 different human development domains, namely 1) long-lived and healthy life, 2) knowledge and 3) human living standard, calculated from such indicators as those of average life expectancy, school-enrollment and literacy as well as income etc. HDI can indicate the extent of development of a country from broader aspect rather than judging by income - namely economic dimension - alone. Figure 4.2.5 displays trend of HDI in ASEAN members during 2001 - 2005[6]. The figure shows that all ASEAN countries except Brunei have gradually elevated their ranks[7].

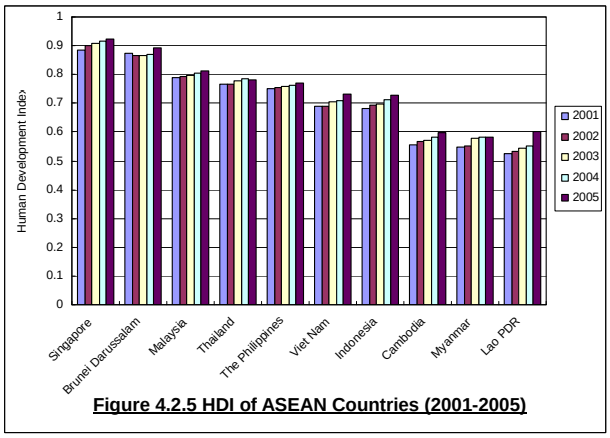


Figure 4.2.5 HDI of ASEAN Countries (2001-2005)

The Union of Myanmar also has accelerated the pace of stepping up its rank reaching 0.549 in 2001, 0.551 in 2002, 0.578 in 2003, 0.581 in 2004 and 0.583 in 2005, but it still remains at considerably low

[5] Statistics of ASEAN Economy base data, 2009
[6] Human Development Report 2001-2004, UNDP
[7] HDI ranks countries by using an index raging between 0 at its minimum and 1 at its maximum. This means that even if a country's average life expectancy, enrollment and literacy rate and also income have increased from previous year, that country's index may fall if other countries' development in these 3 aspects have progressed more than the country.

position of HDI ranking, i.e., 138th out of 182 countries in the world in which HDI data is available. Cambodia (ranked at 137th) and Laos (133rd) have similar positions to that of the Union among ASEAN members. With regard to per capita GDP mentioned above, the Union produced 465$, less than two thirds of that of Cambodia with 756$ and that of Laos with 918$ (all the product were measured as of 2008). Under these situations, the reason why HDI of the Union is ranked a little higher than that of Laos or comparable to that of Cambodia may lie in an assumption that health and educational indicators of the Union have higher values than those of the two countries.

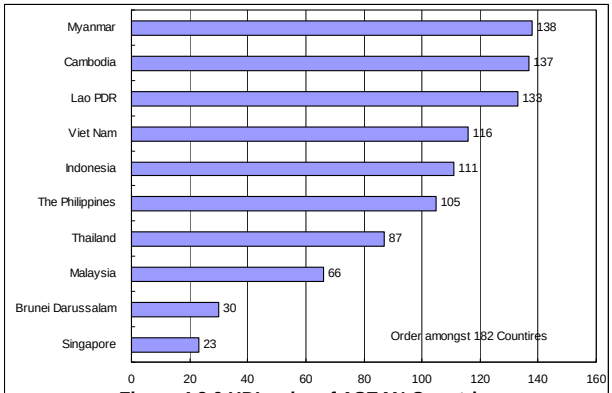


Figure 4.2.6 HDI order of ASEAN Countries (out of 182 countries)

4.2.4 Health Indices and Average Life in ASEAN Countries

The values of health indices in the Union - mainly infant mortality and under-5 year mortality - greatly differ depending on their data sources. When referring to the data of UNICEF "MDG Estimate" and that of UNDP "Human Development Report", higher (worse) values are given to both of infant mortality and under 5-year mortality than those reported in the "Statistical Yearbook" of the Union. For example, UNICEF and UNDP reported that the under-5 year mortality in the Union is 106 out of 1,000 live births (as of 2004) whereas the Statistical Yearbook of the Union made it public as 70 out of 1,000 as of 2004 (or 62 in 2007 according to the latest Statistical Yearbook 2008). Also, as to infant mortality, the sources of UNICEF/UNDP gave the value as 76 (as of 2004) against 45 as of 2004 made public in the Statistical Yearbook 2004 of the Union (or 43 in 2007 by the latest Yearbook).

Health indices given in Statistical Yearbook 2004 of the Union are summary of data reported from townships. About 360 - 370 townships are said to exist throughout the Country as of 2009, while 189 townships made report of health indices for year 2004 to the central government as shown in the report of Statistical Yearbook 2004. It follows that the health indices in the statistical report in the Union are based on those reported from around a half of the total townships existing in the Country. In this regard, it is most probable that 189 townships that reported in year 2004 are mainly belonging to divisions where Bamar race predominates as observed in the Study Area.

Confining to the townships in the Study Area, relatively higher (better) values of health indices are anticipated considering density of established health centers, rate of the vaccinated population etc. It means that possibility of having favorable values of health indices is higher for Divisions than for States and such favorable values may be reflected in the statistical publications of the Union. Focusing on the limited Divisions populated by Bamar race within the Study Area, they would most probably show higher health indices than the average level of the Union as shown in aforementioned Figures 4.1.4 and 4.1.5. However, discussions here center on the comparison between the Union and other ASEAN members by employing the indices given by UNICEF/UNDP[8].

Figure 4.2.7 shows number of death of under-5 year child per 1000 live births, and Figure 4.2.8 does number of death of under 1 year old infant per 1000 live births. Mortalities of under-5 year child and under-1 year infant are both high in the Union, ranking at the worst 2 among ASEAN members. Mortality of under-5 year child per 1000 live births counts 106, meaning one out of nine infants would die before reaching 5 years old, and that per 1000 under-1 year infant counts 73, equivalent to that one

[8] In this context, handling data for the comparison are in conformity with the basic data for estimating HDI since these values basically consist of the HDI.

out of 13 infants would die before their first birthday. Though causes of high infant mortality is not mentioned in the statistical publications of the Union, it is thought that water-borne diseases and malnutrition etc. give negative impact (Health in Myanmar, 2006, Ministry of Health).

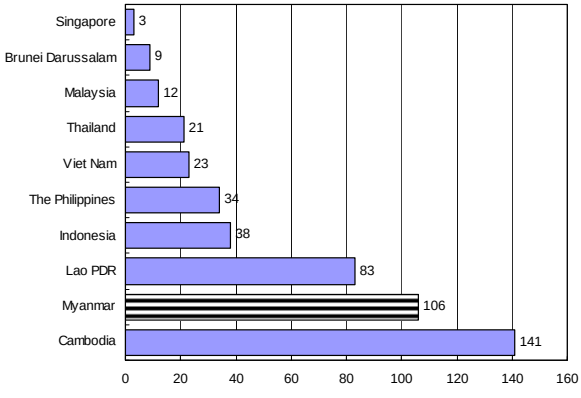


Figure 4.2.7 Under-5 Year Mortality in ASEAN Countries (2004)

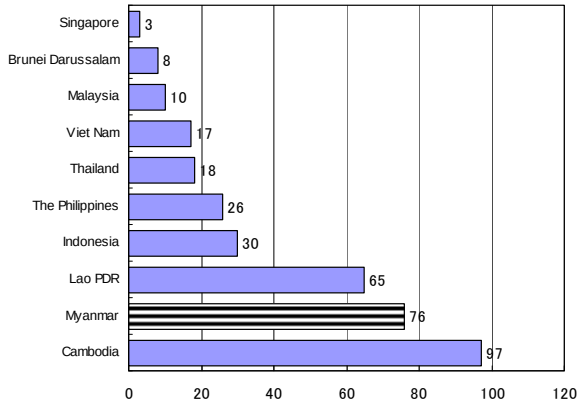


Figure 4.2.8 Infant Mortality in ASEAN Countries (as of 2004)

Mortality of under-1 year infant gives deep impact on average life expectancies. Of course, life is also affected by diseases and accidents even infants survive beyond 5 years old, but in Asian region where HIV doesn't prevail much, there is a strong tendency that the value of under-1 year infant mortality straightforwardly influences the length of average life (in the areas where impact of HIV is high, mortality of sexually active generations, that is to say, that of generations ranging from economically active youth to quasi-aged stratum is elevated which in turn shortens average length of life). Figure 4.2.9 shows average life by gender in ASEAN countries, where it is observed that that of the Union is the second shortest after Laos. Estimated average life as of 2006 in the Union was 58 for male and 64 for female.

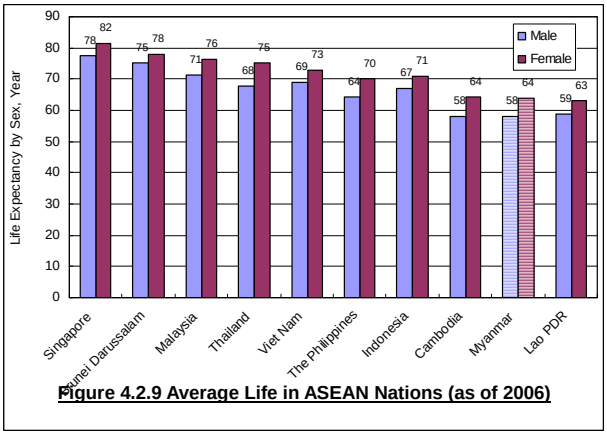


Figure 4.2.9 Average Life in ASEAN Nations (as of 2006)

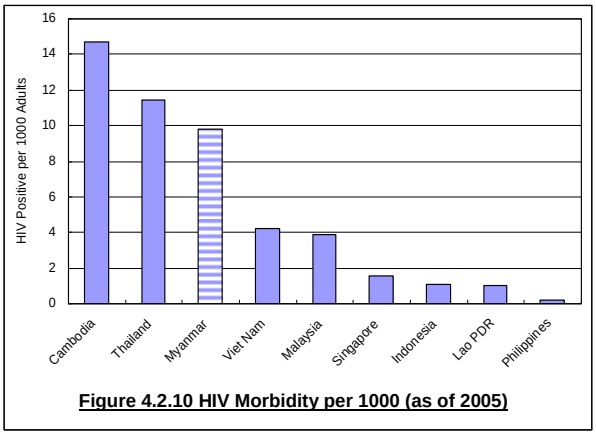


Figure 4.2.10 HIV Morbidity per 1000 (as of 2005)

Number of adult patients infected by HIV older than 15 years old per 1000 population in ASEAN countries is estimated based on the morbidity under HIV by country as of 2005[9]. The result is given in Figure 4.2.10, where the largest number is recorded in Cambodia at 15 out of 1000, followed by 11 in Thailand, and then 10 in the Union follows. The Union was kept under substantial confined social system until 1988 and even now immigration of foreigners into the Union is very much limited. It is therefore considered that development of sex industries is not much as compared with that of neighbor countries. 3rd ranked HIV positive rate among ASEAN countries may imply possibility of being infected by HIV on the occasion of illegal employment and staying in neighboring countries.

[9] USAIDS and WHO reports, posted in their homepages

4.2.5 Water Supply and Hygiene in ASEAN Counties

Figure 4.2.11 gives rate of hygienic access to water in rural areas of ASEAN countries where data are available[10]. The rate of hygienic access to water in rural areas of the Union as of 2004 is estimated at 77% and it is better than Cambodia with 35%, Laos with 43% and Indonesia with 69%. Also, Figure 4.2.11 gives the rate of access in 1990 along with that in 2004, suggesting that the Union improved to the significant extent hygienic access to water in the rural areas since 1990.

Figure 4.2.12 shows access to sanitary facility (latrine) in rural areas of the ASEAN countries. In concrete, the access is approximated by the rate of households established with latrine in rural areas, where the cases of jointly utilizing latrine of the neighbors are possibly included (though not mentioned in the UNDP Human Development Report 2006). Households facing difficulty in erecting latrines due to poverty are also found, but generally in many cases in the Union new houses are built side by side with those of relatives/ kindred (brothers) and parents, postponing the construction of latrines (result of the observation in the villages of the Central Dry Zone).

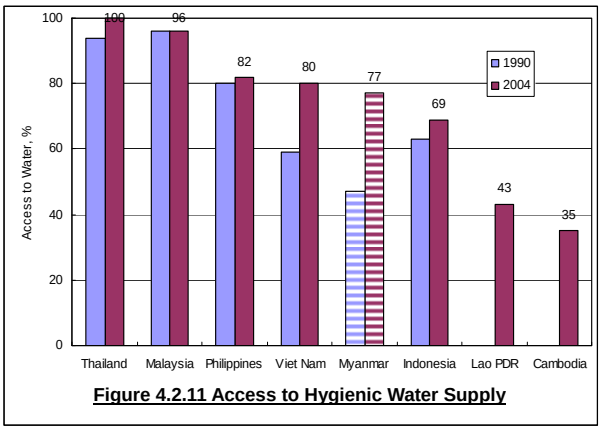


Figure 4.2.11 Access to Hygienic Water Supply

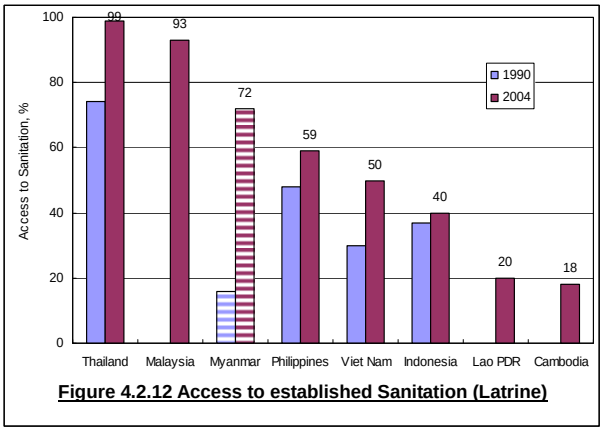


Figure 4.2.12 Access to established Sanitation (Latrine)

According to this figure, it is found that the rate of access to latrine in the Union is not only evidently higher than that in Cambodia and Laos, but also even higher than that in Indonesia, Vietnam and the Philippines. Though concern on data accuracy remains to some extent, it can be at least said that indices on water supply/ hygiene in the rural areas in the Union is more favorable than other indices.

4.2.6 Education Indices in ASEAN Nations

Figure 4.2.13 shows the mean adult literacy rate (older than 15 years old) in ASEAN nations during the period 2000 - 2004. Southeast Asian countries tend to have high literacy rates, where that in 7 of them inclusive of the Union exceed 90% as total literacy rate of male and female. Literacy rate in the Union standing at 90% (86% for female and 94% for male) is comparable to that in Indonesia and Vietnam, and a little better than that in Malaysia.

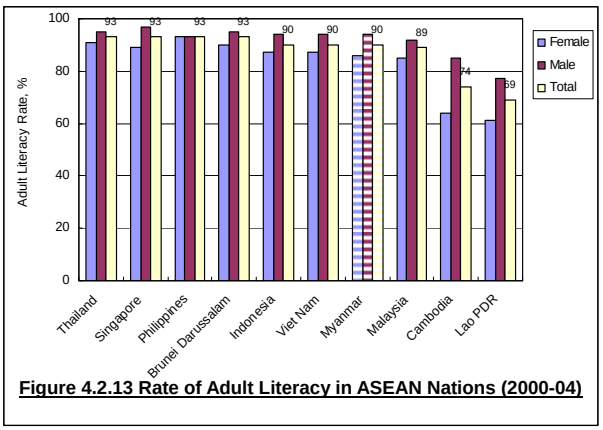


Figure 4.2.13 Rate of Adult Literacy in ASEAN Nations (2000-04)

Literacy rates in Cambodia and Laos are in lower level than that in other ASEAN nations as shown in

[10] UNDP Human Development Report 2006, WHO Database, UNICEF Database & Country Profile: So called safe water should be referred in the definition to WHO standard as, e.g. coliform and faecal coliform shold not be found in 100ml sample water. However almost all data quoted in WHO, UNDP, UNICEF are based on what were reported by those member countries. Hence, even though it is said to be safe or hygienic water, it may imply that the water is from just such sources which are artificially established only, not guaranteeing WHO standard.

Figure 4.2.13. In other words, the Union has achieved comparable level to other ASEAN members as far as literacy rate is concerned though the Union, Cambodia and Laos are always ranked at lower level in per capita economy scale or per capita health indices. According to UNDP Human Development Report 2006, literacy rate of the Union is ranked at 58th out of 128 countries in the world. Also, literacy rate of youth (15 - 24 years old) as of 2004 is estimated at 95%.

Figure 4.2.14 shows rate of primary school net enrollment (giving only 6 countries where data is available[11]), in which primary school net enrollment of the Union is 81.6% for girls, 80.8% for boys and 81% for the mean of the total (as of 2002). This rate remains lower by 10% than that of Cambodia and lower by 2% than that of Laos. However, it may be noteworthy that girl's enrollment in the Union is slightly higher than that of boys. In Cambodia and Laos, on the contrary, primary school enrollment of girls is lower than that of boys by around 6 - 7%. It is very much interesting that girl's enrollment rate is inversed in the Union as compared with neighbors, though the difference by sex is meager 1%.

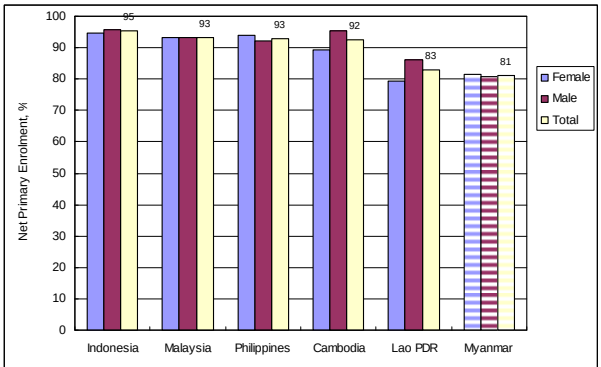


Figure 4.2.14 Primary School Enrollment in 6 Countries (2002)

Above all, the status of women in a Bamar race's family is positioned fairly high. This situation must contribute to serving as the background of girl's higher school enrollment but another plausible cause in the Union is that boys in many cases enter into priesthood in their younger ages. At this occasion they commute to monastic schools belonging to temples. For this reason, boys with lower primary school enrollment rate are not necessarily fail access to education including reading and writing. Also, because of this opportunity of monastic learning, literacy rate (in particular boy's literacy) is believed greatly enhanced in spite of not so higher primary school enrollment.

4.3 Achievement in Millennium Development Goals

Myanmar has been implementing the National Development Plan aiming to accelerate growth, achieve equitable and balanced development and reduce socio-economic development gap between rural and the urban areas in the Country. The major aspects of the Millennium Development Goals (MDGs) are thus covered in the National Development Plan. With the implementation of the National Development Plan, it is reported that certain progress has been achieved in various sectors, such as health, education, infrastructure and agriculture though more efforts be required to attain some of the MDG targets by the year 2015. Table 4.3.1 is the excerpt from Myanmar Millennium Development Goals Report 2005, and following are the points to note:

1) For the poverty reduction quoted in Goal No.l, no specific statement is done in the Myanmar Millennium Development Goals Report 2005. Therefore, it is unknown to what extend the poverty in Myanmar exists and how the trend of the poverty reduction has been. This is due to non-availability of poverty profile in Myanmar as at 2005. However, a nationwide Poverty Profile was published by UNDP in June 2007, making it possible in future to follow up the reduction of poverty.
2) Another target under the Goal No.1 is to reduce the extreme hunger. In connection to the hunger, the Myanmar MDG Report cited the under-nutrition-rate and under-weight rate for children. A declining trend is seen for the both indicators, suggesting Myanmar would achieve the target by

[11] UNDP Human Development Report 2006, and UNESCO' homepage

2015 though there may be argument what the extreme hunger means all about.

3) For the universal primary education cited in Goal No.2, there may be a difficulty to achieve the target saying "boys and girls will be able to complete a full course of primary schooling by 2015" by judging from the present net enrollment ratio of 84.5% in 2005. However, the tendency of increase from 65.7 % in 1990 to 84.5 % in 2005 is a good sign towards achieving the goal.

4) For the Goal No.3 that is gender equality and women empowerment, no specific statement is made in the Report in terms of enrollment of school. However, literacy ratio between male and female was cited and almost no difference is seen. Since Bamar race, the majority in Myanmar, enjoys high women's status in comparison to some neighboring countries in its western side, one may see not much difficulty to achieve this goal.

5) On Goal No.4 referring to child mortality, both infant and under-5 year child mortalities are on a declining trend; 130 in year 1990 to 67 in year 2003 and 98 in year 1990 to 50 in year 2003 respectively per 1,000 live births. The targets are 39 and 28 respectively by 2015, and with utmost effort Myanmar may achieve them.

Table 4.3.1 Achievement of MDGs in Myanmar

Goal	Target	Excerpt from Myanmar MDG Report 2005
1. Eradicate extreme poverty and hunger	Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day.	NA
	Halve, between 1990 and 2015, the proportion of who suffer form extreme hunger.	Myanmar has declining figures in under-nutrition-rate among under-3 children from 42 % in 1988 to 31 % in 1994 and the rate of under-weight among under-5 children also declined from 38.6 % in 1997 to 31.8 % in 2003.
2. Achieve universal primary education	Ensure that by 2015, children everywhere, boys and girls, will be able to complete a full course of primary schooling.	Net enrolment rate in primary education stood at 65.7 % in 1990 and has increased to 84.5 % in 2005. Likewise, youth (15-24 years old) literacy rate increased to 96.5 % from 80.9 % in 1990.
3. Promote gender equality and empower women	Eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015.	Literacy rates in the country were 91.4% of the population in 2001, while males were slightly better (91.7%) compared to women of 91.0%.
4. Reduce child mortality	Reduce by two-thirds between 1990 and 2015, the under five mortality rate.	Under-5 mortality rate is on the descending trend – declining from 130 per 1,000 live births in 1990 to 66.6 in 2003, and the target is 38.5 in 2015 to reach the MDG. With regard to infant mortality rate, it was 98 per 1,000 live births in 1990 but reduced to 49.7 in 2003 with the aim of reaching 28.3 by 2015.
5. Improve maternal health	Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio.	NA
6. Combat HIV/AIDS and other diseases	Have halted by 2015, and begun to reverse the spread of HIV/AIDS.	Under the National Health Plan, health programmes are being implemented to promote the health status of the entire nation.
	Have halted by 2015, and begun to reverse the incidence of malaria and other major diseases.	
7. Ensure environmental sustainability	Integrate the principles of sustainable development into country policies and reverse the loss of environmental resources.	Myanmar Agenda 21 was adapted in 1997. Also, Myanmar signed the UN Framework Convention on Climate Change in 1992 and ratified the Convention in 1994. The Kyoto Protocol was acceded in 2003. A nation-wide tree planting programme has been launched since 1993 and millions of seedlings are being planted annually.
	Halve, by 2015, the proportion of people without sustainable access to safe drinking water.	Access to safe drinking water shows an increased percentage- from 32 % in 1990 to 72 % in 2000. Proportion of people with access to improved sanitation has also increased from 36 % in 1990 to 83 % in 2000.

	Have achieved, by 2020, significant improvement in the lives of at least 100 million slum dwellers.	NA
8. Develop global partnership for development		New lending from the multilateral financial institutions has been suspended since 1988-89 and has few bilateral ODAs to Myanmar in the wake of the economic sanctions.

Source: Myanmar Millennium Development Goals Report 2005

CHAPTER 5 CONCLUSION

5.1 Poverty in the Central Dry Zone

This Study employed Cost of Basic Needs method to establish the Poverty Line. Under this method, there are conventionally 2 poverty lines; 1) Food Poverty Line, and 2) Poverty Line. Food Poverty Line is the minimum food expenditure in monetary term necessary to pay for a consumption basket that will satisfy caloric requirements of 2,300 kcal for a representative adult household member per day. Poverty Line is then defined as the sum of Food Poverty Line and reasonable non-food expenditure to meet basic human needs. The non-food expenditure is usually calculated as the non-food expenditure for those whose total food expenditures are at around the food poverty line.

By using the prevailing food costs in August 2007, when the household baseline survey was carried out, the Food Poverty Line estimated is 163,903 Kyats per adult equivalent per year. This is equivalent to US$ 130 by applying prevalent market exchange rate of 1,260 against US$ 1.0. Non-food expenditures are 67,147Kyats (US$ 53) and 98,044Kyats (US$ 78) for a typical non-farm household member and a typical farm household member per year respectively (since farm household spends on farm input and farm causal labors which are not in the expenditure of non-farm household, their expenditure is bigger than that of non-farm household).

Therefore, the Poverty Lines are 231,050 Kyats (US$ 183) per adult equivalent per annum for non-farm household and 261,947 Kyats (US$ 208) per adult equivalent per annum for farm household. The shares of the food poverty line out of the poverty line are 71 % and 63 % for non-farm household and farm household respectively. The poverty lines per household per annum are, taking into account the number of typical household members, worked out as about 1.1 million Kyats (US$ 858) and about 1.2 million Kyats (US$ 973) for non-farm household and farm household respectively.

Poverty ratio by all the sampled households is 43%, and the ratio for farm household only is 33% whereas the one for non-farm household is 55%. This clearly shows poverty for non-farm household is deeper than that of farm-household. Further, the poverty ratio for farm casual labor is as high as 75%. This result clearly shows where the poorest people are; that is in the category of farm casual labors. Poverty ratio by gender shows deference as expected; namely, the ratio for male-headed household is 43% while the one for female-headed household is 49%.

Poverty gap ratio indicates the depth of the poverty; corresponding to the distance between the poverty line and the average of expenditures for those who fall below the poverty line. In other words, adding the monetary value calculated by multiplying the poverty gap ratio into the poverty line, the person can be lifted up to the poverty line. The poverty gap ratios are; 11%, 8%, 14%, and 20% for whole sampled households, farm household, non-farm household, and farm casual labor household. It is indicated that the depth of the poverty for non-farm household is deeper than that of farm household, and again that of farm casual labor household is further deeper than that of non-farm household. The poverty for farm casual labor household is more than 2 times deeper than that of farm household (20% vs. 8%).

5.2 Income Inequality: Gini Index

There should be inequality in villagers' income. The inequality itself may be justified if it is not so big since it may spur people's competition towards economic vigorous activities. However, if the inequality between the rich and poor, or between the Haves and Have-nots, are considerably high, it may not be accepted socially and social security cost may arise in some societies. To measure the inequality among village members, Gini index was calculated in 6 villages under this Study.

Gini Index ranges from 0.197 for Mingan Village to 0.411 for Legaing Village with an average of

0.387. Mingan village's Gini index is the lowest, 0.197, and also the average income per year per household is 817,317 Kyats which is also the lowest amongst the 6 villages. This village is located in remote area in Bago Hills and very often hit by drought, resulting in low and unstable agricultural production. Here in this village, we may say people are poor and equally poor.

In 2 villages of Ar La Ka Pa and Legaing where the Gini index is over 0.4, we may say the difference between rich and poor is considered somewhat already serious. The gap in annual income between the farm household, richer cadre, and farm casual labor who is the poorest cadre in most cases, reaches as much as 3 times. In fact, the farmer household annual incomes for the 2 villages are over 2 million Kyats while the incomes for farm casual labor households are only about 750,000 for Legaing and about 860,000 Kyats for Ar La Ka Pa. Ar La Ka Pa village is situated at a relatively accessible location to urban areas where some villagers may have fetched good opportunities to raise their income while the others may have not. Legaing village is blessed with irrigated paddy field, whereby income gap between the farmer and landless may have become large, giving the Gini Index over 0.4.

5.3 Whereabouts of the Poor

In the CDZ, rural population can be primarily categorized as farm household and non-farm (landless) household. Non-farm (landless) households consist of about 40 % of the total rural households in the CDZ. Landless households are poorer than the farm households, and the poorest of the poor can be found in farm casual labors. Due to the nature of the seasonality in farming activities, farm casual labors are not dependent totally on farm laboring but are trying to engage in any kind of income activities. Assuming that farm casual labors earn the top share of income from farm labor wage, they are estimated at about 20 to 30 % of the total rural households.

Referring to the poverty ratios, one can easily know how farm casual labor household is poor as indicated that; the poverty ratio for the farm casual labor reaches as high as 75% while poverty ratio for whole landless households including the farm casual labors is 55% and only 33% for farm household. Their annual income also indicates how farm casual labors are poor as compared to other occupations' households. Annual average income of farm casual labor households is 755,000 Kyats as against 1.7 million Kyats for farm households, 1.2 million Kyats for livestock households, 1.1 million Kyats for cottage households, and 1.3 million Kyats for other households including government officers. Farm casual labors earn the least, thereby categorized as the poorest of the poor.

Why so many landless people remain in rural areas of Myanmar can be explained in its structure of population size versus farmlands available. In Myanmar, farmlands are not enough to accommodate all the farm households against an example of, e.g. Thailand where almost no farm casual labor household can be found thanks to much available farmlands therein. Small areas of farmlands in Myanmar against the size of farmer population was the background reason why previous land reform ended in failure or otherwise was hung up in its halfway.

The population of Myanmar is about 87% of that of Thailand while the farmlands in Myanmar accounts for only 52% of that of Thailand whereby one can easily recognize how farmlands are limited in this Country as compared to the neighboring country[1]. There have been 2 times land reforms enforced in 1947 and 1953 respectively. In 1963, revision of tenancy of farmlands was also tried to provide farmland (legally tillage right) to landless tenant farmers. All these practices could not accomplish the objective of creating farmer household with farmlands due mainly to the original scarcity of the farmlands.

[1] Population of Myanmar is 54,300,000 in 2004/05 from Statistical Yearbook 2005 while that of Thailand is 62,300,000 in 2005 from Central Statistics Office. For farmland area, the one for Myanmar is 10,955,000 ha for 2004/05 from Agricultural Census and the one for Thailand is 21,010,000 ha for 1999 from a publication of Ministry of Agriculture.

Looking further into nowadays situation, there is very little light-industry entrepreneurs, e.g. garment factories, due to economic restriction from western countries as well as to foreign exchange regulations enforced in this Country. Light-industry, as is well known, can create a lot of job opportunities, but not the case yet in this Country. Thus, landless people in rural areas cannot find out any place to settle for better income but only remain there.

5.4 Reasons behind Falling into Poverty

Several reasons may be suggested to answer why as much as 43% of the CDZ population are below the poverty line. At first it may be the unstable climatic condition in the CDZ. In fact, distinctive character of any dry zones is its unstable rainfall pattern. Rainfall is actually not much falling, and moreover the pattern varies very widely by year, by month and by place. Except for irrigated lands, their farming depends totally upon the unstable rainfall, on which no one can expect consecutive normal level of harvests over 3 years. Under such condition, investment such as chemical fertilizer entails increasing of risk other than increasing of harvest, hindering consecutive growth, say, in keeping with population growth.

Interviews to rural people can suggest us what has driven them into poverty as; parceling of farmland getting smaller for inheritance, illness and treatment cost, wife's fecundity, multiple debts, wedding ceremony spending much money, apportion of properties, welcome for visitors again spending much money, farm management without knowledge and experiences, respecting monk, drinking in habit, price escalation, purity never suspicion, labor shortage for farm works, insufficient farming successors, education fee, pride in past riches, and precept against killing creatures, donation ceremony, donation of pagoda, compulsory paddy delivery quota prevalent before 1988, cropping order by the authority, farming guidance by extension authority, etc., amongst which the last 6 may be particular to Myanmar.

5.5 Implication in Supporting the Poor

There may be 2 areas to support the poor; by institutional means and by projects. As per the former, almost no institutional system of distributing income from the rich to the poor does exist, e.g. progressive income tax system and land taxation system depending upon the productiveness. As a matter of fact, there is a land taxation system put in place in Myanmar, which is legally a charge of tilling the farmland since ownership belongs to the state. However the rate is not consequential as it is only 5 Kyats/ac for good farmlands and as little as 1 Kyats/ac for infertile farmlands. The rates have not been changed since colonial era, thereby in nowadays contexts one may say the transaction cost accompanied with the collection may surpass the amount collected.

From an angle of development aspects, many measures in Myanmar have centered almost all on the improvement of agriculture, especially of rice, whether it was good or not for the farmer household. This in turn resulted in not centering on landless people, leaving them out of the sight of development. There have not been institutional or project measures to improve the welfare of the landless people, especially farm casual labors, though paddy compulsory delivery quota to the government at prescribed price practiced up until 1988 may be said to have provided cheap rice to those who do not produce the rice. This compulsory system may have sustained the welfare of the poor though harsh to the producer. In any case, however, one may agree to say that there comes already a time of introducing institutional measures, e.g. distribution of welfare through progressive taxation system, reform of land taxation system, and also of creating job opportunities which can absorb landless people.

Apart from above institutional measures, some projects targeting landless people should be put in place. Through the experiences from pilot projects, we recommend for the landless people such projects as mushroom cultivation which can be practiced in house yard, goat revolving, pig revolving,

promotion of vegetable cultivation which can create a lot of farm casual labor works, and cottage activities for example weaving, knitting, embroidery, etc. For the cottage industry promotion, provision of raw materials and in cases equipment and machines can be a good opportunity for them to increase their net income since most of them are in fact engaged as wage labors.

One fact is that creating farm casual labor works, e.g. by promoting vegetable cultivation, cannot alone release farm casual labor household from the poverty trap. Expected annual income by both husband and wife working as farm casual labor would be only about 648,000 Kyats (360 days x 1,800 Kyats; 1000 for male and 800 for female farm casual labors as of 2007). The expected annual income of 648,000 Kyats accounts for only about 60% of the poverty line of non-farm household, that is 1.1 million Kyats. Therefore this simple calculation leads us to believe that there should be other means than or supplementary means to farm casual labor works to get them out of the poverty.

Farmer household, on the other hand, may be living in better condition as compared to landless people. However salient features in natural condition of the CDZ do not allow the farm household to do same practices as what is done in other stable environmental condition. The agriculture practiced in the CDZ is in fact somewhat bipolarized. Along Ayeyarwady river, there are lots of Le (lowland) which enable paddy cultivation and also irrigated paddy fields wherein the farmers can enjoy good harvest as expected. On the other hand, agriculture practiced in Ya (upland), especially along Bago Hills side, is affected by its unstable rainfall both in terms of volume and pattern. The former agriculture is a typical intensive one while the latter typical extensive one. Under the former condition, straight-forward growth could be achieved corresponding to how much s/he has invested if one desires so. Under the latter condition, however, the most important norm in thinking development is to build risk-hedge in their livelihood.

If blessed with irrigation system, there is a proportional relationship between input and harvest until it reaches a threshold. However upland agriculture totally depends on natural rainfall which does not behave as expected by human beings. For example, in areas along the Bago Hills, farmers cannot expect normal harvest over 3 years according to interviews. Here under this condition, inputting of chemical fertilizer automatically entails risks, very often making them insolvent debtor. In upland areas dependent on rainfall, people should exercise risk-hedged livelihood activities and also try to diversify their livelihood. From this viewpoint, farming practices should automatically center on low-input agriculture and diversifying of their livelihood, e.g. combined with livestock rearing, cottage activities, etc.