

WHY RURAL PEOPLE ARE POOR?

A CASE STUDY ON RURAL AREA OF DRY ZONE IN SAGAING REGION

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ABSTRACT

The study aims to analyze the extent of poverty and income inequality and the causes of poverty in the rural area of Dry Zone in Sagaing Region. Head count index and the poverty gap index are used to measure the extent of poverty while Lorenz curve. Based on the data from survey data, the logistic regression model is used to find out the causes of poverty in the study area. The survey on NGOs and Focus Group Discussion (FGD) are also used to identify the causes. The results show that 49.60 percent of respondents in study area are poor. The logistic regression results reveal that household size, age dependency ratio, economic dependency ratio, land ownership, number of source of income, accessibility of information and the accessibility of irrigation water have significantly affect the poverty condition in this area. The results of survey on NGOs and FGD have demonstrated that the causes of poverty in the study area are limited job opportunity, lack of human resource development, poor road and transportation facilities, weak access to credit, no irrigation water, insufficient information, knowledge, and effort and large household size.

Keywords: Poverty, incidence of poverty, Head count index, causes of poverty, income equality,

1. Introduction

Poverty reduction is now the core of development policies in the developing countries. There is considerable disagreement, however, over the extent of poverty and over whether it is increasing or decreasing worldwide. There is also disagreement over how to define poverty.

In a recent World Bank study, Akhter et. al (2007) estimates that in 2002, 75% of the developing world poor still live in rural areas. In the case of Myanmar, the IHLCA report shows that 84% of poverty is found in rural areas and disparities are pronounced across regions. Measuring the incidence of poverty is an important first step in understanding it, but measurement alone does not explain the causes of poverty. Therefore, some questions arise to answer, to what extent, how poverty and rural areas are correlated? And what are the causes of poverty in the rural area?

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According to the IHLCA 2010, the poverty in Sagaing Region decreased by 11.5 percentage point from 26.6 percent in 2005 to 15.1 percent in 2010. In Sagaing Region, the decrease is also higher in rural areas than in urban areas (12.5 percentage point and 5.9 percentage point respectively). However, JICA (2010) reported that in the Dry Zone of Myanmar, the poverty levels were 33%, 55% and 43% for farm households, rural landless households, and the whole of Dry Zone respectively. Thereby, another question arises, what will be the poverty status and its characteristics in the rural area of Dry Zone? To answer this questions, there are no research papers that have conducted on poverty in rural area of Dry Zone in Sagaing Region. Therefore, this paper aims to fulfil this gap to explore the causes of poverty in rural area of Dry Zone in Sagaing Region.

Objectives of the Study

The objectives of the study are:

- (1) To measure the extent of poverty and income inequality in the rural area of Dry Zone in Sagaing Region
- (2) To explore the causes of poverty in the rural area of Dry Zone in Sagaing Region.

2. Method of Study

Both quantitative and qualitative methods are used in this paper. Descriptive method, tabular and graphic illustrations are also used. Required data and information are collected from secondary sources as well as primary sources.

To calculate the extent of poverty in rural area of Dry Zone in Sagaing Region, required data are collected from the selected households that are chosen by using four-stage sampling method. Head Count Index and the Poverty Gap Index are used to calculate the extent of poverty.

Based on the data from the household survey, the Logistic Regression Model is used to find out the causes of poverty in the study area. In addition, to explore the causes of poverty, a survey on NGOs is conducted in the study area. There are 17 working groups from these NGOs that are providing various types of assistance gathered by Focus Group Discussions (FGD) with representative residents regarding main causes of poverty, main activities they are engaged in, their income, their mechanisms of cultivation/inputs in agriculture, household education status, and accessibility to markets, transport conditions, access to credit, information, knowledge and effort of household members.

Measuring Poverty

The extent of poverty and income inequality is calculated from the data collected. Head Count Index and the Poverty Gap Index are calculated to measure the extent of poverty. In addition, Lorenz curve is also developed and Gini Coefficient is estimated for income inequalities in the study area.

Head Count Index

Absolute poverty may be measured by the number of head count (H) of those whose income falls below the absolute poverty line when the head count is taken as a fraction of the total population (N). The Head Count Index (HCI) may be defined as;

$$HCI = \frac{H}{N}$$

where,

H = the number of poor households

N = the total number of households

The Poverty Line

In order to calculate the Head Count Index, the poverty line must be constructed. It is needed to have a baseline survey to calculate the food and non-food poverty lines. In this paper, therefore, it is assumed that the Integrated Household Living Conditions Survey in Myanmar (2009-2010) is a baseline survey to estimate the poverty line. The 2015 poverty line is estimated based on 2010 IHLCA poverty line by adjusting only inflation, other things are assumed to be constant. The actual value of the poverty line per person equivalent per year, in 2005, 2010, and 2015 are shown in Table (1).

Table (1) Poverty Line (in kyats)

Year	2005	2010	2015
Poverty Line	162136	376151	450877

Source: Author's estimation based on 2010 IHLCA

The Head Count Index is the percentage of the population whose living standards (typically proxied by income) lie below the poverty line.

The head count indices presented in Table (2) show that 49.37 percent of the respondents come under the category of poor, while 50.63 percent were in non-poor for Monywa Township. In Ayadaw Township, Head Count Index was 49.44 percent in the poor, while 50.56 percent were reported not to be poor. This means that there are not so different in Head Count Index between Monywa and Ayadaw Townships. The overall number of respondents which represented as Monywa District was 417, of which 49.40 percent were poor, while 50.60 percent were not poor.

Table (2) Head Count Index (2015)

District/Township		Poverty Status		Total		
		Poor	Non Poor			
Monywa District	Monywa Township	No.	117	120	237	
		%	49.37%	50.63%	100%	
	Ayadaw Township	No.	89	91	180	
		%	49.44%	50.56%	100%	
			No.	206	211	417
			%	49.40%	50.60%	100%
Yinmarpin District	Yinmarpin Township	No.	98	81	179	
		%	54.75%	45.25%	100%	
	Sarlingyi Township	No.	81	99	180	
		%	45.00%	55.00%	100%	
			No.	179	180	359
			%	49.90%	50.10%	100%
Overall			No.	385	391	776
			%	49.60%	50.40%	100%
IHLCA		27.4% (2005)		14.9% (2010)		

Source: Survey Results 2014 and 2015

Similarly, in Yinmarpin Township, Head Count Index was 54.75 percent in the poor, while 45.25 percent were reported not to be poor. In Sarlingyi Township, Head Count Index was 45.00 percent in the poor, while 55.00 percent were reported not to be poor. This implies that Yinmarpin Township has a higher number of people living below the poverty line as compared to those in Sarlingyi Township. The overall number of respondents which represented as Yinmarpin District was 359, of which 49.90 percent were poor, while 50.10 percent were not poor.

As comparing the Head Count Index between Monywa District and Yinmarpin District, Yinmarpin District has a higher number of people living below the poverty line as compared to those in Monywa District. The overall number of respondents which represented as the rural area of Dry Zone was 776, of which 49.60 percent are poor, while 50.40 percent are not poor.

The findings of the poverty rate in the present study are quite high compared with the two IHLCA poverty rates of 2005 and 2010. However, this study represented only the rural area of Dry Zone in Sagaing Region. The findings are also supported by 2010 JICA study which

reported that in the Dry Zone of Myanmar, the poverty levels were 33%, 55%, and 43% for farm households, rural landless households, and the whole of Dry Zone respectively.

The Poverty Gap Index

The HCI is the most commonly used method of estimating the incidence of poverty. However this indicator does not take account of the intensity of poverty. The HCI does not change as long as they remain below the poverty line, even though the poor's living standards may improve. Therefore, it is needed to develop a measurement to measure the intensity of poverty.

A popular measure of poverty is the Poverty Gap Index (PGI). The PGI measures the intensity of poverty. It is defined as the extent to which households/individuals fall below the poverty line (the poverty gap) as a proportion of the poverty line. In other words, the Poverty Gap Index can be interpreted as the average percentage shortfall in income for the population, from the poverty line. The PGI is a more important measure than the HCI because two regions may have the same HCI, but distinctly different PGIs. A higher PGI means that poverty is more severe.

The Poverty Gap Index (PGI) is calculated as.

$$PGI = \frac{1}{N} \sum_{j=1}^H \left(\frac{z - y_j}{z} \right)$$

where

N = the total population

H = the total population of the poor who are living at or below the poverty line

z = the poverty line

y_j = The income of the poor individual j .

By definition, the poverty gap index is a percentage between 0 and 100%. Sometimes it is reported as a fraction, between 0 and 1. A theoretical value of zero implies that no one in the population is below the poverty line. A theoretical value of 1 implies that everyone in the population has zero income. In some literature, PGI is reported as P_1 while the HCI is reported as P_0 .

Table (3) indicates that in Monywa Township the average poverty gap was 178796.89 kyats, while in Ayadaw it was reported to be 145333.2 kyats. This shows that the amount of income required to remove the poor out of poverty is much higher in Monywa Township than in Ayadaw Township. For the overall Monywa District, 164339 kyats of income is needed to remove the poor out of poverty. The Poverty Gap Index of Monywa Township is higher than those of Ayadaw Township. These Poverty Gap Indices show the intensity or severity of poverty in these areas. The poverty gap indices are 0.20, 0.16, and 0.18 for Monywa Township, Ayadaw Township, and Monywa District respectively. For the Monywa District, , the Poverty

Gap Index is 0.18 and poverty line is 450877 kyats, then an average increase of 81158 kyats per individual per year would eliminate extreme poverty.

Table (3) Poverty Gap and Poverty Gap Index

District/Township	Poverty Gap	Poverty Gap Index
Monywa Township	178796.89	0.20
Ayadaw Township	145333.20	0.16
Monywa District	164339.00	0.18
Yinmarpin Township	171025.00	0.21
Sarlingyi Township	165587.80	0.17
Yinmarpin District	168565.00	0.19
Overall	166304.00	0.18

Source: Survey Results 2014 and 2015

Similarly, in Yinmarpin Township the average poverty gap was 171025 kyats, while in Sarlingyi Township it was reported to be 1165587.8 kyats. This shows that the amount of income required to remove the poor out of poverty is much higher in Yinmarpin Township than in Sarlingyi Township. For the overall Yinmarpin District, 168565 kyats of income is needed to remove the poor out of poverty. The Poverty Gap Index of Yinmarpin Township is higher than the Sarlingyi Township. The Poverty Gap Indices are 0.21, 0.17, and 0.19 for Yinmarpin Township, Sarlingyi Township, and Yinmarpin District respectively. This indicates that 85667 kyats require for per individual per year to eliminate the poverty in the Yinmarpin District.

As shown in Table (3), the Poverty Gap Index for Monywa District and the overall Dry Zone are the same, while it is slightly higher in Yinmarpin District. These poverty gap indices show the intensity or severity of poverty in these areas. The Poverty Gap Indices are 0.18, 0.19, and 0.18 for Monywa District, Yinmarpin District, and the Dry Zone respectively. This indicates that the depth of poverty for Yinmarpin District is deeper than that of Monywa District. For the study area, the Poverty Gap Index is 0.18 and poverty line is 450877 kyats, then an average increase of 81158 kyats per individual per year would eliminate extreme poverty.

Empirical Analysis on Causes of Poverty

In this part, the determinants of poverty are analyzed with Logistic Regression on household survey data and macroeconomic data from survey on village and NGOs and the results of FGDs.

Household Determinants of Poverty

To analyze the determinants and identify the causes of poverty in the study area, logistic regression is applied to primary data. Logistic regression analysis allows one to predict probability of a binary dependent variable from a set of independent variables that may be continuous, discrete, or a mix of them. Logistic regression method is a powerful technique because it is relatively free of restrictions and it allows analyzing a mix of all types of predictors.

The Logistic Regression Model can be shown as follows:

$$Prob (y = 1) = \frac{e^z}{1 + e^z}$$

where

y = binary dependent variable (y = 1 if event occurs, y = 0 otherwise)

e = the base of natural logarithms and

$$Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_p X_p$$

With constant β_0 coefficient, $\beta_1, \beta_2, \beta_3, \dots, \beta_p$ are coefficients for p predictors.

Proposed $X_1, X_2, X_3, \dots, X_p$ (Independent Variables) could be the gender of household head, number of household size, age dependency ratio, economic dependency ratio, land ownership, number of source of income, education of household head and occupation of household head.

The gender of household head means that 1 for male household head and 0 for female household head. The household size is the number of household members. The age dependency ratio compares the number of household members less than 15 and over 59 year of age, relative to those between the ages of 15-59. The higher the ratio value, the higher the dependency burden on the household. The economic dependency compares the number of unemployed and number of earners. The land ownership means the total acres owned by household. The number of source of income means the number of income generating activities of household. The education of household head means that 1 for up to primary education and 0 for above primary education for household head. The occupation of household head means the type of occupation of household head as 1 for unemployed and casual labor and 0 for others.

The dependent variable is poverty status of households. Let $y = 1$ if the household is poor and $y = 0$ if it is not poor.

The results in Table (4) show the results of Logistic Regression Model of poverty which is applied to primary data for Monywa District. Dependent variable is poverty status, while the independent variables are gender of household head, education of household head, and

occupation of household head, household size, age dependency ratio, economic dependency ratio, land ownership, and number of source of income.

Table (4) Results of Logistic Regression Model of Poverty for Monywa District

	Coefficient	Standard Error	Wald Statistic	P-Value
Gender of Household Head 1 = Male & 0 = Female	-.087	.306	.081	.775
Household Size	.283***	.068	17.420	.000
Age Dependency Ratio	.195	.252	.598	.439
Economic Dependency Ratio	.953***	.241	15.681	.000
Land Ownership (Acre)	-.090***	.019	23.263	.000
Number of Source of Income	-.669***	.172	15.187	.000
Education of Household Head Up to Primary =1 & Above Primary = 0	.147	.300	.238	.626
Occupation of Household Head Unemployed and Casual Labor = 1 & Others =0	.557	.379	2.161	.142
Constant	-.671	.546	1.510	.219

Note: *** indicates statistical significance at 1% level.

Source: Survey Results 2014 and 2015

The empirical results show that gender of household head, age dependency ratio, education of household head, and occupation of household head are not statistically significant. Variables such as household size and economic dependency ratio are statistically significant at 1% and it has a positive sign. This indicates that as household size and economic dependency ratio increase, there is a probability that poverty can increase. The variables, land ownership and number of source of income are also statistically significant at 1% and it shows a negative sign which means that as land ownership and the number of source of income increase, there is probability that poverty decreases.

Table (5) shows the results of Logistic Regression Model, which is applied to primary data for Yinmarpin District. Table (5) shows that gender of household head, age dependency ratio, education of household head, and occupation of household head are not statistically significant. Variables such as household size and economic dependency ratio are statistically significant at 1% and it has a positive sign. This indicates that as household size and economic dependency ratio increase, there is a probability that poverty can increase. The variables, land ownership and number of source of income are also statistically significant at 1% and it shows a negative sign which means that as land ownership and the number of source of income increase, there is probability that poverty decreases.

Table (5) Results of Logistic Regression Model of Poverty for Yinmarpin District

	Coefficient	Standard Error	Wald Statistic	P-Value
Gender of Household Head 1 = Male & 0 = Female	-.043	.344	.016	.899
Household Size	.345***	.076	20.364	.000
Age Dependency Ratio	.218	.269	.655	.418
Economic Dependency Ratio	.944***	.250	14.310	.000
Land Ownership (Acre)	-.100***	.020	24.659	.000
Number of Source of Income	-.803***	.199	16.210	.000
Education of Household Head Up to Primary =1 & Above Primary = 0	.115	.317	.132	.716
Occupation of Household Head Unemployed and Casual Labor = 1 & Others =0	.244	.296	.681	.409
Constant	-.813	.559	2.118	.146

Note: *** indicates statistical significance at 1% level.

Source: Survey Results 2014 and 2015

The results in Table (6) show the poverty predictors using Logistic Regression Model which is applied to primary data for the study area. Since the Omnibus Chi-square test is significant at 1% level, the binary logistic regression model can explain the relationship of poverty status and the independent variables.

Table (6) Results of Logistic Regression Model of Poverty for Rural Area of Dry Zone in Sagaing Region

	Coefficient	Standard Error	Wald Statistic	P-Value
Household Size	0.238***	0.049	23.681	0.000
Age Dependency Ratio	0.374**	0.179	4.369	0.037
Economic Dependency Ratio	0.857***	0.169	25.688	0.000
Land Ownership	-0.08***	0.015	30.592	0.000
Number of Source of Income	-0.558***	0.126	19.568	0.000
Accessibility of Information	-0.417***	0.091	20.798	0.000
Accessibility of Water	-0.566***	0.185	9.403	0.002
Constant	0.561	0.343	2.678	0.102

Note: *** and ** indicate statistical significance at 1%, and 5% level, respectively.

Source: Survey Results 2014, 2015 and 2016

From Table (6), it is found that variables such as household size and economic dependency ratio are statistically significant at 1% and it have positive signs. This indicates that when a

household size becomes larger and has more economic dependency burden, it has a probability of being poorer. The land ownership, and number of sources of income and accessibility of information are also statistically significant at 1% but it have negative signs. This means that as land ownership, and the number of sources of income increase and information are easily accessed, then there is a probability that poverty decreases. The accessibility of irrigation water is statistically significant at 1% and it is also negative. This means that if the accessibility of irrigation water increases, there is a probability that poverty will decrease in the rural area of Dry Zone in Sagaing Region. The age dependency ratio is also statistically significant at 5% level and it has a positive sign. This indicates that when a household becomes larger age dependency burden, it has a probability of being poorer.

Macroeconomic Determinants of Poverty

In the macroeconomic determinants, no access to credit or inappropriate credit system, poor transportation, deficiencies in labor market, limited information and knowledge to extend, low human resource development, and no irrigation water are included. To analyze these macroeconomic determinants that are causes of poverty in the study area, surveys on NGOs and FGD are conducted. There are 17 working groups from various NGOs operating in the study area. To collect the required data, a survey is conducted on these 17 working groups of NGOs with a questionnaire. The qualitative data is also collected by FGD for 13 groups organized in 13 villages. To acquire more in-depth information on perceptions, insights, experiences or beliefs, each group was organized by about 10 participants who are village administrators, elders of the community and enthusiastic peoples.

Survey Results of NGOs

Besides the government authorities and government supported programmes for improving the socio-economic status of the rural community especially the rural poor, non-government organizations, both local and international, are also taking part in this process. It is generally assumed that these NGOs have important roles in supporting the socio-economic status of a community or society in order to achieve the poverty reduction status. The role of these NGOs in reducing poverty is not a new issue. Especially since the post-World War II, NGOs' involvement in poverty reduction has become a mainstream (Suharko, 2007). They are generally engaged in relief, emergency or longer-term development works or the mixture of all three.

For the study area, there are 17 working groups from these NGOs that are providing various types of assistance to the village community of this study area. The various NGOs include Marie Stopes International (MSI), Groupe de Recherche et d' Exchanges Techonologiques (GRET), Pact Myanmar, Shae Thot, and Worth. During the interviews with representatives of the respective NGOs, the representatives produced important contributions and various

activities that are needed to improve the welfare of the local people. The activities that are provided for the community's welfare are shown in Table (7).

Table (7) Activities of NGOs for Community Welfare

	No. of NGO	Percent
Poverty Alleviation	9	53
Income Generation	9	53
Community Health	7	41
Transportation	3	18
Water Supply	2	12
Women Empowerment	2	12

Source: Survey Results 2014 and 2015

There are 6 areas (activities) that the representatives have reported in the discussions in order to improve the welfare of the local community in the study area. This indicates that these 6 activities are the most important to be provided in improving the welfare of the people in the study area. Those activities are income generation, women empowerment, community health, transportation, water supply, and poverty alleviation.

According to Table (7), nine groups (53%) out of 17 groups are undertaking programmes for income generating activities. This indicates that there are low job opportunities and most of the low income people are working in the private informal sector in this area. In addition, to improve the role of women, 12% of representatives have stated as also working in activities for income generation of women. Women's income can also support as additional income to the household such that the living status of these poor households can be improved. However, with NGOs involving in income generating activities point out that there is a deficiency in labor market resulting limited job opportunities in the study area.

The second important activity is improving the community health care service activity. Out of 17 groups from the NGOs, seven groups or 41% of representatives of the groups have agreed that the community health care service needs to be improved and that it is urgently needed to provide the people with healthcare facilities in the study area.

Similarly, three groups (18%) out of 17 representatives of the NGOs have launched programmes to improve the transportation facilities. This indicates that there is poor transportation network in some of the villages in the study area. Improvement of transportation facilities is essential as connection within the rural areas and with the nearest towns and cities is important for both economic and social activities.

Then, two groups or 12% of representatives have also suggested that it is needed to implement a water supply project as there is insufficient water in some of the villages in the study area as mentioned before in this chapter. The villages in the study area do need water supply for other activities rather than with only to drinking water.

Table (8) Recommendations of NGOs to Improve Poverty Alleviation Programmes

	No. of NGO	Percent
Job Opportunity	10	59
Education	7	41
Vocational Training	5	29
Health Care	3	18
Transportation	2	12
Market	2	12
Loan	2	12
Livestock	1	6

Source: Survey Results 2014 and 2015

According to the survey conducted on NGOs, the recommendations of NGOs for promoting poverty alleviation programmes, the perceptions of NGOs on areas that they should provide in order to achieve the goals of poverty alleviation and perceptions about the causes of poverty in the study area are shown in Tables (7), (8), and (9) respectively.

From Table (8), it is found that the NGOs involved, recommended the areas in which improvement is required in order that the poverty alleviation programmes provided are to be effective. The majority of the representatives recommended job opportunity as first priority followed by education, vocational training, and healthcare and with transportation, market, and loans and with livestock as the last priority.

Job Opportunity

Table (8) reveals that 59% of the representatives suggested that more job opportunities should be created for the poor to generate income for them. This is supported by the perceptions of NGOs that they should be provided with needed programmes so as to achieve the goals of poverty alleviation as shown in Table (9). 47% of representatives agree that the income generation activities should be contributed to the poor people who have no specific jobs. There are many people who have no specific jobs because of a deficiency in labor market resulting in limited job growth in the study area. This is one of the causes of poverty in the study area. According to the perceptions of NGOs about the causes of poverty as shown in Table (10),

35% of representatives agree that the limited job opportunity is also the causes of poverty in this study area.

Table (9) Perceptions of NGOs on Areas to Achieve the Goals of Poverty Alleviation

	No. of NGO	Percent
Income Generation	8	47
Education	5	29
Health Care	5	29
Technical Training	4	24
Capital	4	24
Vocational Training	3	18
Transportation	1	6

Source: Survey Results 2014 and 2015

Human Resource Development

According to the results shown in Table (8), 41%, 29% and 18% of NGOs' representatives suggested to give priority to the areas of education, vocational trainings and health care services as part of the work to improve poverty alleviation programmes, respectively. This indicates that human resource development is important to reduce the poverty level and it is needed to provide human resource development projects for improving the community as part to undertake poverty alleviation programmes in the study area. These results are also supported by Table (9) where 29% of representatives stating that the NGOs should provide the requirements for education, also 29% for health care services, 24% and 18% respectively, for technical trainings and vocational training to the local community to achieve the goals of poverty alleviation. This is because the formal and informal education is needed to support the people who rely on farming and non-farming activities for their livelihood.

Table (10) Perceptions of NGOs Concerning the Causes of Poverty

	No. of NGO	Percent
Formal Education	8	47
No Capital	7	41
Low Technology	6	35
Job Opportunity	6	35
No Irrigation Water	5	29
Vocational training	4	24
Poor Transportation	3	18

Source: Survey Results 2014 and 2015

Similarly, according to Table (10), 47% and 24% of representatives perceived that the main causes of poverty are the low level of formal education and lack of vocational trainings in the study area, respectively. Therefore, it can be said that the lack of human resource development trainings is also one of the causes of poverty in the study area.

Transportation and Communication

Similarly, according to information presented in Table (8), 12% of representatives suggested that transportation is needed to be facilitated, while 12% said that markets should be created for the local products and also 12% suggested that credit facilities should be provided with low interest rates in order to help and support income generating activities for the community as part of the effort to alleviate poverty. Road and transport facilities should be provided in places where these improvements are essentially needed so that the farmers and businessmen can transport their goods from their villages to the markets with easy access. In the study area, some villages are far from the nearest towns or markets needing long distance travels to reach those destinations and having poor transport facilities, they found it hard for their deliveries of goods to markets and other places. Sometimes it is very difficult to transport and to communicate with the markets especially during the rainy season. Three groups or 18% of representatives of NGOs perceived that there is poor transportation in the study area. This indicates that poor transportation and communications are also the causes of poverty in the rural area of Dry Zone.

Irrigation Water

In addition, Table (10) shows that 29% of NGOs' representatives report that no irrigation water is also a cause of poverty in this study area as irrigation water is essential for farming activities. In the study area, the farmers of some villages rely heavily on the weather conditions as rain water is much needed for cultivation. Unpredictable weather conditions (especially drought) have negatively affected the yields of agricultural products. This is vulnerable for the farmers in the study area and if irrigated water is provided, it will become another source of water for the villages without irrigation water at present.

Capital

According to the survey results regarding the perceptions of NGOs about the causes of poverty as presented in Table (10) shows that 41% of respondents agreed as one of the main causes of poverty is also scarcity of capital or no capital at all for the poor to do business and to extend their present businesses. Most of them are poor and they have no collateral to get the credit. When low income households have no access to credit with low interest rates, they cannot start or expand their businesses. That is also one of the reasons why they are poor.

Results of Focus Group Discussions

In FGD, discussions are made on the main causes of poverty, the main activities that the respondents are engaged in, their income conditions, agriculture and their mechanisms of cultivation/inputs, household education status, and accessibility to markets, transport conditions, access to credit, information and knowledge and also the effort of household members.

Job Opportunity

In the FGD when asked, what are the main causes of poverty in their village, almost all respondents in the FGD told that because of no regular jobs and therefore no regular income and for this, most of the people are poor in their villages. Some respondents replied that the majority of poor are landless laborers and they heavily rely on agriculture for their livelihood, so that beyond the agricultural seasons they have no regular jobs to generate income. According to the FGD respondents, even during the agricultural season, it is not easy for them to have regular jobs and in just only during cultivating and harvesting periods that they have regular income and jobs. Some respondents told that some people have left their villages to find other jobs outside their community.

Human Resource Development

Many of the respondents in the FGD said that no modern method of cultivation is being used by farmers and that they are still using traditional and primitive methods. It is one of the reasons why farm work cannot prosper and improve the life of farmers leaving them in poverty. The FGD respondents requested as to provide the essential technical trainings for farmers. It is also unexpected to find out that in one village (Kyaukkwe village), there are still no matriculation passed students in this village and only 4 or 5 students are studying in the middle school level education. When the discussion group is asked, why the children are not sent to other villages or towns to study the middle school level education after passing the primary education level and many respondents in the FGD responded that because they have not enough income and they cannot afford to send their children to other villages and towns to study higher education levels after completing the primary level education. So it can be stated that lack of income leads to lack of education for the families in this village. Support for improvement of education is highly needed in this area.

Transportation and Communications

According to the respondents of FGD in four villages (Motesoekone, Kyaukkwe, Sapatwin and Sihlaung), there is very poor transportation and poor road conditions in and around their villages. The respondents of FGD in Kyaukkwe village told that their village is too far and it is at least 20 miles from the nearest market (Monywa) and they can travel only about two times a month to this market to buy what they need and to sell their products. Poor road conditions also hinder their access to market their products.

The respondents of FGD in Sihlaung village told that they cannot use their village road in the rainy season and at that time they have much difficulty to transport and to communicate with the market. They also told that every day in the open season, about 40 people usually go to Monywa to work and about 10 people go to Monywa and others places to sell their handmade products such as chairs made by using stubs of toddy-palm branches. However, during the rainy season they cannot go to work and sell their products because of the very poor condition of roads. One man respondent of FGD in Sihlaung told that his younger brother was bitten by a snake (viper) last year and he passed away because he could not have immediate and sufficient treatment due to poor transportation and communication.

Access to Credit

According to the respondents of FGD, the Agricultural Bank and Cooperatives give loans only to households who are engaged in agricultural activities and so landless laborers cannot have access to credit from these Agricultural Bank and Cooperatives. Many of the respondents in FGD told that landless laborers and low income households also cannot have access to credit easily from private money lenders because of their lack of collateral. They also said that difficulties in access to credit are also one of the causes of poverty for these households.

Some of the FGD respondents told that agricultural credit is too low as compared with the actual costs of production and duration of credit is also too short. Many respondents engaged in agriculture from this FGD mentioned that the current credit system is not convenient for them because the amount of credit is too small and duration is for only one season. They also requested that it is needed to provide them with long term agricultural credit.

Water Sufficiency

Weather, particularly drought is one of the main concerns of the FGD respondents regarding agriculture. The respondents of FGD in five villages (Motesoekone, Kyaukkwe, Sapatwin, Pyaungpyar and Sihlaung) told that most of the households mainly relied on agriculture for their livelihood. Whenever there is drought, many people are facing difficulties for cultivation because there is no irrigation water in their villages. They also requested to be provided with irrigation water. But, in contrast, the respondents of FGD in Bitethayet mentioned that there have no problems with water for cultivation in their village for they can get sufficient irrigation water whenever it is needed.

Access to Information and Knowledge

According to the respondents of FGD, they know that their methods of cultivation are traditional and primitive, but they do not know how to upgrade their methods of cultivation. There are Chinese watermelon cultivations in some villages (Motesoekone, Sapatwin and Hnawkatoe) and the respondents of FGD in these villages told that they also want to cultivate

watermelon like those Chinese watermelon cultivators; however, they have limited information and knowledge about where to sell and how to cultivate. The respondents said that if they have perfect information about the market and knowledge and technology of how to cultivate watermelon, they can also become engaged in cultivating watermelon. The main product of Khoethan is onion and the respondents of FGD in Khoethan village told that the economic condition of many people in their village depend on the price of onion. The respondents said that last year the price of onion declined causing losses to many people who cultivated and stored onion. They have limited information about the price of onion. So, lack of market information is also a problem they have to face in cultivation and distribution of their products and this can result in acquiring less income or may be even they may face losses.

Effort and Household Size

When the respondents in the FGD are asked, which factors are the main causes of poverty in their villages, some respondents answered that household members putting no effort for the household livelihood activity and large household size are the causes of poverty. The respondents of FGD in Sihlaung and Bitethayet told that some poorer people are not trying to work harder or finding extra work to do during free time. The respondents mentioned that the lack of effort to work is the main cause of poverty.

It is concluded that there are many causes of poverty in the study area. These are limited job opportunity, lack of human resource development, poor road and transportation facilities, no access to credit, and no irrigation water, limited information and knowledge, and lack of effort and large household size. It is seen that because of these causes, the study area remains with most of its rural population being poor and still much is needed to improve its all-round development with effort and support from the authorities, NGOs together with the participation of the community.

Conclusion

This paper analyzes the causes of poverty in the rural area of Dry Zone in Sagaing Region. In addition, it measures the extent of poverty and income inequality in the rural area of Dry Zone in Sagaing Region. Based on the data from the household and village surveys, the Logistic Regression Model is used to find out what are the causes of poverty in the study area. Moreover, to fit and support the regression results and explore the causes of poverty, a survey on NGOs and FGD are also used in this paper.

Based on the survey results, it is found that 49.60 percent of respondents in rural area of Dry Zone in Sagaing Region are poor. Since the poverty gap index is 0.18 and poverty line is 450877 kyats, an average increase in per capita income of 81158 kyats per annum would eliminate extreme poverty in the study area.

Logistic Regression Model is applied to primary data from the study area. Dependent variable is poverty status, while the independent variables are household determinants and macroeconomic determinants.

The empirical results shows that the variables related the household determinants (gender, education and occupation of household head) and macroeconomic determinants (access to credit and inappropriate credit system, transportation and job opportunity) are not statistically significant. Household size, age dependency ratio, economic dependency ratio, land ownership, number of source of income, accessibility of information and the accessibility of irrigation water have statistically significant effect on the poverty condition in this study area.

According to the survey results of NGOs and FGDs, there are many causes of poverty in the study area. These are limited job opportunity, lack of human resource development, poor road and transportation facilities, no access to credit, and no irrigation water, limited information and knowledge, and lack of effort and large household size. It is seen that because of these causes, the study area remains with most of its rural population being poor and still much is needed to improve its all-round development with effort and support from the authorities, NGOs together with the participation of the community.

Recommendations

To reduce the poverty in the study area, it is important to improve income generation from nonfarm activities in the rural areas. The vocational trainings, technical supports and seminars are also needed to develop the business knowledge for local people. It is also needed to use more suitable multiple cropping systems, introduce modern agricultural techniques, and improve transportation and agricultural infrastructure such as irrigation systems for improving agricultural activities and further to increase agricultural productivity. The government also needs to provide technical assistance and trainings to introduce the high-value activities such as horticulture and dairy farming which are labor intensive and generate substantial employment. In addition, the government needs massive investment in rural education and infrastructure such as roads, electricity, and information systems in order to improve productivity and living standards in the study area. By doing so, it can be expected that the reduction of poverty, and thereby socioeconomic development of rural area of Dry Zone in Sagaing Region.

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