Gender and Rural Poverty in Myanmar: A Micro Level Study in the Dry Zone

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Abstract

The study investigates the poverty incidence, access to resources, and the factors influencing income of both male and female-headed households in the dry zone of Myanmar. A household survey was conducted in six villages with a sample of 220 households in 2003. The Cost of Basic Needs (CBN) method was applied in constructing the absolute poverty line. By applying the absolute poverty line of 252 Kyats[3] per person per day, the female-headed households are more likely to be poor than the male-headed households with or without household size adjustment. Results of the regression analysis revealed that average per capita income of rural households is significantly influenced by 8 independent variables. They are: gender of household head, household size, land holding size, degraded land size, cattle heads, labour force, sources of income, and irrigation water. Moreover, the separate regression analyses were run for male and female-headed households. In addition to the some common significant variables (land, labour, cattle, degraded land, and household size), female-headed households' income is significantly influenced by training attendance and schooling years of household head. In male-headed households, age of household head, number of income sources and irrigation water are highly linked with the average per capita income. The gender focus rural development strategies should be adopted for promoting the welfare status of both male and female-headed households in the dry zone.

Keywords: rural poverty, livelihoods, male and female-headed households, dry zone, Myanmar

1 Introduction

Myanmar is essentially an agrarian economy with two-thirds of the total population engaged in subsistence agriculture. The rural poor households have suffered from low access to various services (education, health, water supply, etc.), and lack of assets such as land and livestock, which are strongly related to the rural poverty status (UNDESA,

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[3] 1 Kyat $\cong$ 0.123 € (Nov. 2006)

1999). Although there is widespread poverty in Myanmar, the comprehensive study for preparing a strategy to reduce poverty including gender equality in Myanmar, is still lacking. The Central Statistical Organization (CSO) has conducted the household income expenditure survey, covering all States and Divisions with total 25,470 households in 1997. Based on relative poverty line of daily per capita expenditure of 53.69 Kyats (for minimum subsistence food plus non-food consumption), the poverty incidence for urban was 23.9 percent, for rural was 22.4 percent, and for the whole country was 22.9 percent in 1997 (CSO, 1997).

The Japanese economists (KUROSAKI et al., 2004) have applied the poverty line corresponding to the value of 400 kg rice per person per year to estimate the Headcount Index (HCI) of rural households. The research findings indicate that the highest poverty incidence of 68 and 54 percent were found in the two villages of the dry zone.

The World Bank (2001) argues that the country is trapped in abject poverty despite its rich resources base and the trend of poverty is increasing through times in the last ten years (COLLIER and DOLLAR, 2001). According to UNDP (2004), life expectancy rate, adult literacy rate, and GDP per capita in Myanmar are 57 years, 85 percent, and US\$ 1,027 (PPP), respectively in 2002. About half of the population does not have access to affordable essential drugs, while 36 percent do not have access to sanitation, and 28 percent do not have access to safe drinking water in 2000.

The feminization of poverty has been linked to a perceived increase in the proportion of female-headed households, and Myanmar is not an exception in this respect. In the study of UNDESA (1999), the 'worse-off women' of Myanmar were characterized as lack of income and assets, old age, sickness, heavy work burden, insufficient food, poor clothing, and low quality housing in the sample six villages in different regions (hilly, dry zone, delta, and coastal regions). Generally, female household heads are older and more economically active but less literate and own significantly less cultivated land than the male household heads.

The paper will investigate the female and male-headed households' poverty incidence, the factors influencing income, and their access to productive resources (land, cattle, and irrigation water, etc.), their human capital (labour, literacy, and head's schooling years), financial capital (capital investment, and received credit), and social capital (participation in various self-help groups, and trainings). The research findings will contribute to give recommendations for raising living standard of rural households in the dry zone.

2 Methodology

2.1 Livelihoods Framework

The application of a sustainable livelihood framework in the reduction of rural poverty is increasingly centered for the preparation of Poverty Reduction Strategy Paper (PRSP) and the rural development programme in the poor countries (SCOONES, 1998; ELLIS et al., 2003). The current understanding of poverty gives considerable emphasis on ownership or access to livelihood resources that can be put to productive use as the

building blocks by which the poor can construct their own routes out of poverty (WORLD BANK, 2000). The utilization of a livelihood framework to understand rural poverty in this agrarian country, with focus on access to resources, could be the most appropriate.

In the vulnerability context, the rural people in the dry zone face frequent droughts, seasonal unemployment, and increasing land degradation. Their resources and capabilities such as land, livestock, labour, capital, educational level, health status, and income are not only interrelated with various vulnerabilities, but also with the government's policies, performance of rural institutions, and formation of self-help groups (social capital). Key questions, concerning with the following issues were developed from the framework in the study: (i) Who are the rural poor? (ii) What assets do they have? (iii) How do they make a living? (iv) What are the institutions helping for their rural livelihood activities in the dry zone?

2.2 Study Area

The UNDP has launched the Human Development Initiative Programme since 1993 in the most fragile and resource poor dry zone townships of Chaung U, Kyaukpadaung, and Magway. The Kyaukpadaung Township has the common characteristics of dry zone such as low rainfall, frequent drought, inadequate safe drinking water, low land productivity, and high land degradation. The sample six villages, in which same UN and NGOs' activities were implemented, were purposively selected to study.

The Kyaukpadaung Township suffers from drought twice in every three-year cycle due to low rainfall associated with crop failure. The average monthly temperature ranges from a minimum of $9°C$ (in December) to a maximum of $42°C$ (in March). The climate is influenced by the southwest monsoon, leading to a bimodal rainfall pattern with the average annual rainfall of less than 750 mm. The average land holding size of a rural household is decreased from 2.3 ha (or 5.8 acres) in 1999 to 1.4 ha (or 3.6 acres) in 2003. About one fifth to one third of the rural households is landless depending on the demographic and socio-economic characteristics of a village. Among the sample six villages, three sample villages are received irrigation water from a dam to grow rice.

2.3 Field Survey

The household income and expenditure survey was conducted in the sample six villages from August to November 2003, covering 160 male-headed households (MHs) and 60 female-headed households (FHs). The female-headed household is about 9 percent of total households in the sample villages. Primarily, the female-headed households are widows (95 percent), and the rest are divorcee and single women. On the other hand, nuclear household structure was dominant in the MHs. In the field survey, household's demographic, socio-economic data, and access to public services data were collected through a structured questionnaire. The sample households include 1,176 persons, implying that the average household size is 5.4 persons.

3   Research Findings

3.1   Poverty Line of the Study Area

The poverty line, used to identify poor against non-poor, was constructed based on the absolute poverty concept that refers to living below the subsistence minimum daily calorie requirement of 2100 kcal per person, and other essential goods (FOSTER *et al.*, 1984; RAVALLION, 1998). It is noted that other Asian countries of Lao PDR, Cambodia, Vietnam, and China have adopted 2100 calorie per person per day as benchmark indicator in their poverty analysis. The Cost of Basic Needs method (CBN) was applied in constructing the food poverty line as the dry zone rural households have a similar food consumption pattern. The second lowest quartile's food consumption basket was used as a reference for food consumption in order to avoid underestimation of poverty. Using the FAO calorie conversion table of 1985, each food quantity was converted and then scaled up by 1.13 to reach the recommended intake of 2100 kcal per person per day. The food poverty line was estimated as 215 Kyats per person per day by multiplying the food quantities[4] with average food prices (see Table 1).

Table 1: Food Composition and Respective Food Poverty Line in the Study Area

Items	Food Quantities of Ref. Household ×1.13 (gm/person/day)	Received Average Calorie (kcal/person/day)	Average Food Expenditure (Kyat/person/day)	Calorie Contribution (%) From Survey	FAO Recommended
Rice	482	1701	68	81.0	45.0
Cooking oil	40	3	36	0.1	10.0
Meat & fish	35	120	28	5.7	20.0
Eggs	0.05	3	2	0.1	
Pulses	69	74	28	3.6	5.0
Vegetable	185	50	20	2.4	5.0
Spices	59	32	28	1.5	
Sugar	25	86	2	4.1	
Beverage	4.32	12	3	0.6	
Other foods	17	19	6	0.9	15.0
Total		2100	**215**	100	100

Source: Field survey, 2003

It is needed to check on not only the minimum requirement of calories for a person but also the percentage contributions of the food items to total calories in order to obtain a good balance food basket. The rural people rely on rice to get the recommended daily energy intake because the percentage contribution of rice to total energy is 81 percent, which is greater than the FAO recommendation of 45 percent. They take less in other food items (especially meat and fish) than the recommended level due to higher prices.

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[4] Among the total food consumption, rice consumption contributes about 80 percent of total calories of the household. The paper set the food poverty line at average per capita consumption of rice is 174 kg per year plus other foods in 2003, and KUROSAKI *et al.* (2004) set the rice/food poverty line at 200 kg per year in 2001.

They more prefer to take pulses, which are produced and readily available in the study area.

After estimation of the food poverty line, the food share regression model (RAVALLION and BIDANI, 1994) was used to estimate minimum non-food expenditure of the households with income just reaching the food poverty line. The estimated food demand function is shown in Table (2).

Table 2: Estimated Food Demand Function

Name of coefficient	Estimated coefficient	Standard error	
Constant (α)	0.830***	0.008	R squared = 0.163
Coefficient (β)	-0.404***	0.056	

***: Significant at $p < 0.01$
Source: Field Survey, 2003.

The non-food poverty line can be estimated as follows:

$$\text{Poverty Line} = \text{Food Poverty Line } (2 - \alpha) \text{ or} :$$
$$\text{Non} - \text{food Poverty Line} = \text{Food Poverty Line } (1 - \alpha), \text{ thus} :$$
$$\text{Non} - \text{food Poverty Line} = 215 \text{ Kyats } (1 - 0.830) = 36.5 \text{ Kyats} \approx 37 \text{ Kyats}$$

Hence the absolute poverty line of 252 Kyats (215 Kyats + 37 Kyats) per person per day at the current price was finally derived and applied. If the absolute poverty line of 252 Kyats per day is converted into US$, it is equal to about US$ 0.3 at the market exchange rate of 850 Kyats/US$ prevailing during the study period in 2003. The World Bank's studies present that the national poverty lines at the market exchange rate of Cambodia is about $ 0.45 in 2004, Lao is about $ 0.26 in 2002-03, and Vietnam is about $ 0.35 in 1998.

3.2 Measuring Poverty Incidences of Male and Female-headed Households

The most commonly used income/consumption poverty indicator is simply the proportion of population whose income/expenditure falls below the poverty line, which is called the 'headcount index'. In this research, poverty statistics are calculated using the standard FGT poverty measures (FOSTER et al., 1984).

The sample population for male-headed household was 891, and for female-headed household were 285. Overall, about 43 percent of the total population was living below the poverty line of 252 Kyats/person/day. The Headcount Index (HCI) of male and female-headed households is about 39 percent and 58 percent, respectively assuming all members in the household enjoy equal food share. It can be summarized that the FHs

are more likely to poor than the MHs without household size adjustment (see Table 3).

Table 3: Poverty Incidence of Male and Female-headed Households

Category of Household & population	Without Household Size Adjustment[1]			Share of Poverty		With Household Size Adjustment[2]			Share of Poverty	
	P_0	P_1	P_2	f	%	P_0	P_1	P_2	f	%
Female (285)	0.58	0.04	0.018	165	32	0.47	0.068	0.015	133	41
Male (891)	0.39	0.028	0.09	347	68	0.22	0.018	0.04	195	59
Total (1176)	0.43	0.034	0.011	512	100	0.28	0.031	0.07	328	100

Source: Field survey, 2003.
[1] all members in the household enjoy equal food share,
[2] children food consumption is 0.65 of the adult calorie consumption,
P_0 is the headcount index, P_1 is the poverty gap index, P_2 is the squared poverty gap index

The household size adjustment and the scale of economy should be taken into account as ignoring household size will overestimate poverty of the families with children, and underestimate it for couples without children (WHITE and MASSET, 2003). By applying the common adult equivalent scale of 0.65, the HCI of FHs (47 percent) is higher than the MHs (22 percent). The female-headed households' share of poverty is increased from 32 percent to 41 percent when household size adjustment was made. It is obvious that the female-headed households are more likely to be poor than the male-headed households with or without household size adjustment. The evidence reveals that there is a gender dimension to poverty in the study area.

3.3 Cumulative Distribution Function of Daily Per Capita Consumption

It is important to test whether the group ranking is robust to the choice of the poverty line. The simplest way for the robustness of poverty comparisons based on the headcount index of poverty is to plot the cumulative distribution of consumption for two household groups at a defined poverty line. It is needed to observe whether the curves intersect or not. If they do not intersect, then the group with the highest curve is poorer than the other group (QUISUMBING et al., 2001).

In Figure (1), the horizontal axis shows monetary values (Kyats/day) in log while the vertical axis shows cumulative percent of the population. The absolute poverty line of 252 Kyats per person day is at the scale '5.53' and it is noted that about 60 percent of the total sample population have a sufficient consumption to get the minimum daily calorie allowance. However, the distribution of daily per capita consumption of female-headed household shows that about 40 percent of the population of female-headed households is above the poverty line. It can be concluded that male-headed household's poverty incidence is lower than the female-headed household as the cumulative distribution curve of male-headed households is lower.

Figure 1: Distribution of Expenditure in Rural Households
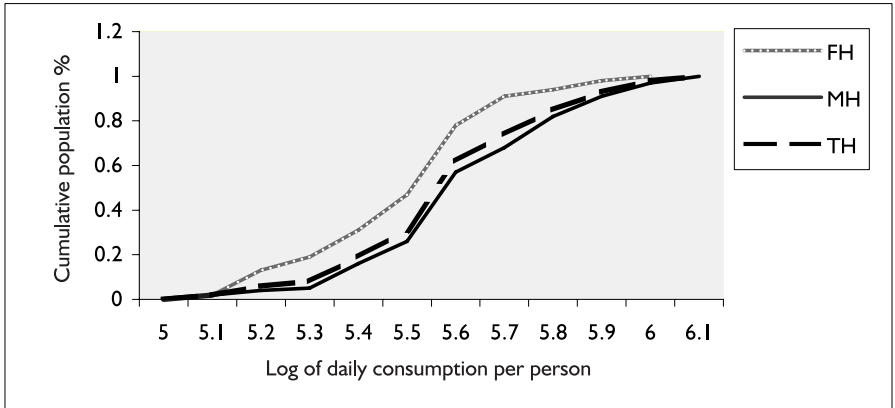
3.4 Characteristics of Poor by Gender of Household Heads

Poverty analysis in the rural dry zone indicates the following predominant characteristics of the poor by gender of household heads:

(a) Poor tend to live in larger households with younger household head in both male and female-headed households. Although the female-households have smaller household size, their lesser resources (land, cattle, and capital investment) lead to poorer than the male-headed households (see Table 5).

(b) Literacy and schooling are important indicators of the quality of life, as well as the determinants of the poor ability to take advantage of income earning opportunities. Poor heads are more likely to be less educated than non-poor. There is no illiterate male head but about 8 percent of female heads are illiterates.

(c) Poor especially female-headed households have more number of children school drop out at the primary education level than the poor male-headed households.

3.5 Employment, and Income of Male and Female-headed Households

Employment, and Income of Male and Female-headed Households The majority of male heads are engaged as farmers (81 percent), 3 percent in livestock farming, 3.8 percent as agricultural laborers, 4.4 percent as non-agricultural laborers, 2 percent as street vendors, and 2.5 percent as home-based workers and 2.5 percent as jaggery workers. About 63 percent of female heads are engaged as farmers, 7 percent in livestock farming, 3 percent as jaggery workers, 13 percent as agricultural laborers, 3 percent as non-agricultural laborers, and 5 percent as both street vendors and home-based workers. Because of provision of loan from Pact Myanmar women saving group, the rural women have an opportunity to engage primarily in livestock farming activity and street vendors for income earning. The FHs earn lower average daily per capita income than the MHs in all types of employment except non-agricultural labour.

Table 4: Average Per Capita Income of Male and Female-headed Households Category

Category	Average Daily Per Capita Income (Kyats) N	Average Daily Per Capita Income (Kyats) Mean	Farmers N	Farmers Mean	Agri Laborer N	Agri Laborer Mean	Non-agri Laborer N	Non-agri Laborer Mean	Self-employed N	Self-employed Mean
MHs	160	248 (114)	136	258 (113)	6	187 (110)	7	130 (62)	11	229 (103)
FHs	60	197 (102)	42	224 (100)	8	126 (80)	2	155 (139)	8	142 (73)
THs	220	234 (113)	178	250 (112)	14	152 (96)	9	135 (74)	19	192 (99)

Field Survey, 2003.
Standard error in parenthesis.
MHs = male-headed households, FHs = female-headed households, THs = total households. Farmers = work as farmer & livestock farmer, Agri laborer = agricultural laborer, Non-agril laborer = non-agricultural laborer, Self-employment = petty trader, street vendor, & home-based worker

3.6 Livelihood Resources, and Rural Institutions

The majority of the sample rural household relies on the agricultural activities for their livelihoods in the dry zone. About 20 percent of sample FHs and 6 percent of MHs are landless. The FHs own significantly smaller land size than MHs. The FHs households have less number of cattle heads and have received less irrigation water for crop production. Moreover, the FHs have low capital investment and less number of cultivated crops than the MHs.

There are two sources of credit in the rural areas: (1) Myanmar Agricultural Development Bank (MADB), and (2) Group Fund of various Self-help Groups (SHGs). The MHs have received a large amount of credit from MADB than FHs. The farmers group, livestock group, women's income generation group, and soil conservation group have been formed in the UN poverty alleviation programme since 1997. Both FHs and MHs have received the nearly same amount of credit.

The households in rural areas have commonly more than one source of income as they usually work both in agriculture and non-agriculture sectors. Because of the sample MHs own a larger land size, their source of income primarily comes from rice, oil seeds, and pulses production. On the other hand, the FHs have received the average annual per capita income mainly from wage laborer, and oil seeds crop production.

3.7 Factors Influencing Per Capita Income

Household income or consumption measures a household's ability to obtain goods and services. Generally, household consumption typically fluctuates less than income. However, poor households may smooth income instead of consumption (MORDUCH, 1994) due to few opportunities for consumption smoothing. Therefore, poor households with no assets will consume all their current income (FAFCHAMPS, 1999, p.19). This study has chosen the average per capita income as dependent variable in the regression model.

First, a multivariate correlation analysis was done to know the collinearity of the independent variables. The number of under 5 years old children deaths and frequency

Table 5: Livelihoods Resources of Male and Female-headed Households

Category	MHs (N=160)	FHs (N=60)	THs (N=220)	t and χ^2 tests
Landless (%)	6	20	10	p = 0.000***, df = 1
Land (acres)	4.4	2.6	3.9	p = 0.000***, df = 218
Degraded land (acres)	0.49	0.29	0.44	p = 0.023**, df = 218
Labour (No.)	2.5	2.4	2.5	p = 0.131ns, df = 218
Cattle heads (No.)	2.5	1.9	2.3	p = 0.077ns, df = 218
Capital (Kyats/year)	34,437	24,884	31,832	p = 0.000***, df = 218
Sources of income (No.)	2.2	2.0	2.1	p = 0.062ns, df = 218
Credit (Kyats/year)	25,669	25,075	25,507	p = 0.910ns, df = 218
Frequency of training attendance	1.3	0.9	1.2	p = 0.099ns, df = 218
No. of crops grown/year	2.8	2.1	2.6	p = 0.000***, df = 218
Received irrigation (%)	32	28	31	p = 0.732 ns, df = 1

Source: Field survey, 2003.
Significant at ** $p < 0.05$, *** $p < 0.01$, ns = not significant

of visiting the doctor variables are correlated weakly with the dependent variable. The capital investment per year, number of crops grown, land tenure status is highly related with the average land holding size. Hence these variables are excluded in the model.

The correlation result shows that land holding size and degraded land is correlated weakly ($r < 0.5$). Most of the small and marginal farmers own more degraded land. Although family size and number of labour is correlated, the correlation result is less than 0.5. The labour force means the labour who is able to work and at age of 16. These variables are included in the model. Finally, thirteen variables with high degree of correlation with the dependent variable and low degree of correlation with each other are included in the regression model.

$$I_j = \beta_0 + \beta_1 X_{1j} + \beta_2 X_{2j} + \beta_3 X_{3j} + \beta_4 X_{4j} + \beta_5 X_{5j} + \beta_6 X_{6j} + \cdots + \beta_{13} X_{13j} + \mu_j \quad (1)$$

where: I_j = average daily per capita income of household 'j', β_0 = constant, β_1 to β_{13} = coefficients to be estimated, X_1 = age of household head (years), X_2 = age squared of household heads, X_3 = household head's schooling years, X_4 = household size (number), X_5 = land holding size (acres), X_6 = degraded land size (acres), X_7 = cattle heads (number), X_8 = household labour force involved in agriculture and non-agriculture sector (number), X_9 = household loan amount from the rural bank and self-help groups in survey year 2003 (Kyats/year), X_{10} = training attendance for skill enhancing of household heads, X_{11} = household sources of income (number), X_{12} = dummy variable of receiving irrigation water for crop production, X_{13} = dummy variable of gender of household heads, and μ is the error term.

Results of the regression analysis reveal that the average per capita income of rural households is significantly influenced by 8 independent variables. They are: gender of household head, household size, land holding size, degraded land size, cattle heads, labour force, sources of income, and received irrigation water. The household size, and degraded land size variables are negatively and significantly associated with the average per capita income (Table 6). Among the significant variables, the effect of degraded land size on the average income is the largest: if degraded land size increases by one unit, then the average per capita income would be decreased by about 42 Kyats. The land holding size, cattle heads, and labour numbers have significantly and positively influenced on the average per capita income. Moreover, number of sources of income is an important strategy to improve the rural livelihoods of the dry zone. If a household has an additional source of income, then average per capita income would be significantly increased by 23 Kyats. Moreover, the irrigation water is also important for crop production and food security especially in the dry zone.

The gender of the household's head variable indicates that if a household head were male, then the rural income would be significantly increased. Keeping other things the same, FHs would receive a daily average per capita income of 30.4 Kyats less than MHs. Overall, the model is significant and can explain the variation in the rural household's daily per capita income by 52 percent. The F ratio of explanatory variables in the model for total household is statistically significant at $p < 0.01$ level.

The separate regression models were run for male and female-headed households. In addition to the some common significant variables such as land, labour, cattle, etc., household heads' age, sources of income, and irrigation water for crop production variables are positively and significantly influenced on the average income of male-headed households. Because of the majority of male heads are engaged in farming sector, receiving irrigation water would significantly enhance their crops production and income.

The additional determinants of average income in the female-headed households are household heads' schooling years and frequency of training attendance. It is obvious that human development programme (literacy, trainings, health, etc.) is important for increasing income of the FHs. Because of the adjusted R squares of male and female-headed households are 45 and 42 percent, respectively, the regression models with 12 independent variables, have moderate and high level of explanation on variations in the average income earning. The F ratio for both male and female-headed households' model is statistically significant at 0.01 level.

4   Conclusions and Recommendations

The female-headed households are more likely to be poorer than male-headed households. It is observed that the gender inequality in the distribution of income in the rural dry zone is substantial. The MHs receive higher average per capita income than FHs because FHs have poor livelihood resources (land, cattle, and capital) and they rely on low wage agricultural laborer as a major source of income. Therefore raising per capita income of the low-income rural households (especially FHs) demands the promotion of employment-generating activities. Furthermore, the promotion of human

Table 6: Factors Influencing Per Capita Income of the Rural Households

Variables	Total Households (β_j and Std. Error)	MHs (β_j and Std. Error)	FHs (β_j and Std. Error)
Intercept	7.50 (83.95)	16.53 (93.43)	188.81 (186.92)
- Age of head	4.75 (3.10)	6.68* (3.62)	-5.30 (6.70)
- Age squared	-0.036 (0.028)	0.054 (0.033)	0.0603 (0.06)
- Head's schooling years	3.98 (2.58)	2.48 (3.14)	9.95** (4.39)
- Household size	- 28.39*** (3.59)	- 30.01*** (4.54)	- 19.25*** (5.21)
- Land holding size	17.55*** (2.97)	16.95*** (3.45)	22.26*** (6.41)
- Degraded land size	- 41.90*** (13.43)	- 40.65*** (15.50)	- 82.52** (31.09)
- Cattle heads	8.68*** (2.47)	8.82*** (3.16)	8.05** (3.37)
- Labour force	27.64*** (8.71)	20.39* (10.81)	42.45*** (13.13)
- Loan money amount	- 0.00019 (000)	- 0.00012 (000)	- 0.0003 (000)
- Training attendance of head	5.02 (4.26)	2.38 (5.02)	22.82** (9.54)
- Sources of income	23.35*** (7.89)	27.34*** (9.90)	6.91 (11.63)
- Received irrigation water (Received =1, otherwise = 0)	23.15* (12.15)	29.48* (15.45)	18.83 (17.78)
- Gender of head (Male = 1, Female = 0)	30.41** (14.24)		
- R^2	0.55	0.49	0.48
- Adjusted R^2	0.52	0.45	0.42
- N	220	160	60
	$F_{13,206}$ 19.47***	$F_{12,147}$ 11.86***	$F_{12,59}$ 11.81***

Source: Field Survey, 2003.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

development programmes (literacy campaign, access to universal primary education, and skill-enhanced trainings) is needed to uplift the female-headed households' living standard. In order to increase the average income of male-headed households, the provision of loan (for increasing income diversification) and irrigation water are essential. Hence the gender focus development strategies should be adopted for promoting the welfare status of both rural women and men. Because of gender equality is an essential concept for the analysis and eradication of poverty, the gendered poverty analysis should be carried out especially where percentage of female-headed households is considerable high. Further research on why individual female are more disadvantaged than male should be done to understand intra household poverty, which has received less attention.

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