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Issues and Options of Food Security and Poverty: An Empirical Study of Mizoram, the Eastern Extension of the Himalaya

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Abstract This paper examines issues and options of food security and poverty in Mizoram, northeast India. The area, we have studied suffers from acute food insecurity and chronic poverty as about 33% people live below poverty line and 17% people live under chronic poverty. Rice is the main food staple with limited availability. Agriculture dominates in economic practices as about 80% people depend on practicing agriculture to carry their livelihoods. Moreover, shifting cultivation characterises agriculture as about 50% people practice it. It is carried out in the fragile hilly slopes mainly in the forest areas with low yield. Although, forest products and livestock farming constitute agriculture in a greater scale yet, their contribution in food security is inadequate. We studied 16 villages from eight districts of Mizoram (two villages from each districts). A survey of 1527 households (76% of the total households) was conducted through random sampling methods and structured questionnaire on agriculture, occupation, income, food security and poverty was framed Further, participatory approach was adapted after rapid field visits of the studied villages. Correlation, regression and descriptive statistics were used to analyze data. We observed that poverty and malnutrition in the study area is high in comparison to the state and national level. The study suggests that livelihood options are required to be enhanced and diversified for poverty reduction and attainment of food security. At government level, public distribution system for proper food supply should be made regular and most responsible.

Keywords: *food security, poverty, livelihoods, shifting cultivation, Mizoram*

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1. Introduction

The issue of food security and poverty are growing globally however; their status is not uniform worldwide as they vary from developed countries to developing one. Food security and poverty go opposite to each other. It means that higher is the level of food security, lower is the level of poverty and vice versa. The developing countries of the world face acute food insecurity and thus, suffer from poverty and malnutrition. Food security mainly depends on production, procurement and distribution of food grains. Availability, access, stability and utilization of food are believed four pillars and are the important dimensions that regulate food security. Before the 1960s, food security was equated with self-sufficiency in major staples. Later on, with increase in population and decrease in cropped land, food insecurity situation aroused. Food safety, on the other hand, significantly assists food security through reducing food losses and food borne illnesses; increasing food availability, suitability, utilization and contributing to improve nutrition and health.

The term 'food security' refers to the availability of food in a space and time and its accessibility to all groups of people. The United Nations [22] defines food security as a state where both the availability and accessibility of food are ensured. At the household level, food security can be defined as adequate access to enough food and to supply the energy needed for all family members to live healthy, active and productive [16]. It implies that food is available and accessible at all times to carry livelihoods [25].

About 850 million people are undernourished or chronically hungry [4], out of which, 830 million people are from the developing countries and most of them living in rural areas [6]. Price volatility, higher commodity prices and an increasingly inelastic demand in the rich world further expose the poor to food insecurity and malnutrition risks [13]. An increase in population has led to more pressure on arable land and encroachment of forest areas and thus, a significant deforestation happened [5]. This also let to food insecurity situation. However, food insecurity is existed not only due to the growth in population and low production of crops; it is also existed due to mismanagement in food grain distribution system. Von Braun et al. [23] observed that global food production would be sufficient to provide everyone with his minimum calorie needs if available food was distributed according to need. Similarly, Chappell and LaValle [2] and FAO [3] noticed that current global food production is

sufficient to feed the world, but the hungry cannot afford the food. A report from the World Bank [24] says that about 80% of the hungry live in developing countries with 50% being smallholders. Therefore, smallholders rather than large-scale commercial farmers are the backbone of global food security [7].

In the Himalayan region, a majority of the rural people does not have sufficient nutrition in their diet; consequently they suffer from nutrition deficiency related diseases [14]. Further, they have little or no access to productive agricultural lands [21]. Crop yield is low as compared to that in plains [12]. Increasing needs as well as pressure of population on the arable land, the traditional farming has become unsustainable both economically and ecologically [10,17].

Northeast India contributes 8% of the country's area and 3% of total country's population. It has 3.3% area under food grain crops. It produces 5.8 million tones food grains against of required 7.4 million tones. Food grain production decreased to 1.92% and crop productivity decreased to 1.32%. Similarly, per capita deficit varies from 11 grams in Tripura to 287 grams in Meghalaya in 2010 [9].

Mizoram faces food insecurity because of inadequacy in food production. About a half of the total food requirement is imported from the other states. Improper public distribution system further enhances food deficit, which is however increasing. Low productivity of crops from the arable land and population pressure further put the state into food vulnerability. Both availability and accessibility of food can solve the problems of food scarcity and malnutrition. Nutritional value of food consumed is the other measurement of poverty [11].

Rice is the main food staple of Mizoram which grows mainly under shifting cultivation and wet rice cultivation. It meets 33% of the state requirement [8]. A study carried out by the author shows that area under wet rice cultivation increased by 13.6% and thus, production also increased by 13%. Meanwhile, area under shifting cultivation decreased by 58% and subsequently, its production decreased.

Poverty refers to lack of enough money or food to carry living requirement. According to the World Bank, a number of populations lack enough money and food and live below poverty line, worldwide. However, it varies from country to country. The proportion of population living below poverty line is much higher in developing countries as it was observed 17% in 2011. In 1981, population living below poverty line was noticed 52%. It decreased to 43% in 1990. The World Bank report (2011) on poverty shows that about 80% of the extreme poor lived in South Asia (399 million) and Sub Saharan Africa (415 million). In addition, 161 million populations of East Asia and Pacific Region live below poverty line.

Hunger and malnutrition determine the level of poverty. In developing countries, hunger and malnutrition have attracted the attention of scholars [18]. The World Bank (1986) observed that about 73 million populations (34%) did not have sufficient energy intake. Further, household food security, health services, a healthy environment and proper care of mother and children determine child survival and development [1]. Nutrition maintains health condition and it also impacts on the development of nation. The healthy people denotes to the healthy nation.

India's concern on nutrition is centuries old. Although, it achieved tremendous position in production of food grains during the last decades yet, the problem of chronic malnutrition, particularly among children and mother, is existed simultaneously. A report of the Hindu [19] exhibits that per capita/day calorie intake in India has decreased from 2221 (Kcals) in 1983 to 2058 (Kcals) in 2011-12 while ideal calorie intake is 2400 Kcals/days. Economic Survey of India 2008 reports changes in per capita net availability/day in cereals and pulses. In cereals, per capita net availability/day increased slightly (16.9%). Meanwhile, it decreased 48.1% in pulses after a gap of above 50 years. As a whole, 6.9% increase was noted in per capita net availability/day in India.

Even being an emerging economy and self-sufficient in food production through green revolution technology, India retains the status of the highest poverty amongst the world countries. About 29.8% population lived below poverty line in India (2009-10). This figure was 37.2% in 2004-05. Most of the states of India suffer from chronic poverty. The highest population living below poverty line is from Bihar state i.e. 53.5%. It is followed by Chhattisgarh (48%). In terms of the lowest poverty, Pondicherry leads with 1.2% population living below poverty line. Goa follows it (8.7%). The other states Himachal and Jammu and Kashmir states have 9.5% and 9.4% poverty respectively.

The states of northeast India have above 15% poverty. In 2009-10, Manipur has the highest poverty (47%). Assam follows it (37.9%). One amongst the states of northeast India, Mizoram recorded 15.4% poverty in 2004-05. It increased to 21.1% (1.91 hundred thousand people) in 2009-10. An increase of 5.7% poverty in Mizoram was noticed during the period of five years [20]. In terms of per capita income that determines poverty, it was fixed Rs. 816 per capita per month (Rs. 27 per capita per day) for the rural areas of India. For Mizoram, this amount was fixed Rs. 1066 [15]. At the International level, poverty is estimated with 1.25 USD per capita/day income.

Mizoram has plenty of natural resources. People's livelihood largely depends on practicing shifting cultivation and the use of these abundant resources. Most of the settlements lie in the remote forest areas thus; the rural areas lag behind in terms of infrastructural development. Accessibility by any means of transportation in these rural areas is less. These hindrances have led to rural backwardness, low income and food insufficiency and thus, most of the rural villages suffer with poverty and malnutrition. This paper examines the two important issues of food security and poverty and their spatial patterns in Mizoram, northeast India. For convenience, we divided this paper into two parts – food security and poverty and established relations that how do food insecurity affect chronic poverty in Mizoram. It is an empirical study, based on the case study of 16 villages (1527 households).

2. Materials and Methods

2.1. The Study Area

The State of Mizoram, lies in the eastern extension of the Himalaya, is an integral part of northeast India. A landlocked state, Mizoram is bordered by Myanmar in the east and south and by Bangladesh in the west. Manipur and Assam in the north and Tripura in the northwest

delimit its national boundary. A large part of Mizoram characterises hilly terrain. Valley fills and flood plains constitute a small portion of the land. Average altitude is about 1000 m and the highest peak in Phawngpui (2157m) located in Blue Mountain in Lungtlai district in the southeast part of the state. Mizoram stretches between 21^{o} 58' - 24^{o} 35' N and 92^{o} 15' - 93 ^{o} 29' E, covers 21087 km^2 and shares 0.64% of the country's geographical area. The 16 villages, which we studied, lie in eight districts of Mizoram, two villages from each district. Mizoram has 1.92 million populations with 22.78% growth rate, according to the census of 2011. The sex ratio stands for 975 females per 1000 males and population density noted 52persons/km^2. Scheduled caste and scheduled tribe population represents 0.03% and 94.46%, respectively. Population distribution is sparse; concentrated highly in the hill tops. Urban population shares about 51% of the total population. Mizoram stands second in literacy rate (more than 90%) in India.

2.2. Data Acquisition and Survey Methods

The study was based upon the collection of empirical data. A case study of 16 villages was carried out (Table 1). These villages are located in eight district of Mizoram, represent the whole State. Selection of villages was based on their location – altitude, distance from the road head, and from the service centres. Population size was another measure to select them. We surveyed total 1527 households, which represents 76% samples of the total population of all villages. Sampling was random and also based on the availability of the head of households. A structured questionnaire was framed and questions were raised mainly on the issues of food insecurity, poverty and malnutrition. Poverty rate was calculated using Suresh Tendulkar Committee Report (Planning Commission of India) of 2010. Tendulkar methodology uses implicit prices derived from quantity and value. Data was collected in household consumer expenditure surveys for computing and updating the poverty line. We used statistical method using SPSS software to calculate data. Regression, correlation and descriptive statistics were mainly used. This study was conducted in 2014. Participatory approach was adopted after rapid field visits of the villages.

Table 1. Case study villages, total number of HHs, surveyed HHs and Per cent of Survey HHs

Name of Village	District where the village is located	Altitude (M)	Total number of HHs (2011)	HHs surveyed (2014)	% of surveyed HHs
Tualcheng	Champhai	1513	157	136	86.6
Pamchung	Champhai	1167	63	57	90.5
Nausel	Aizawl	946	61	53	86.9
Hmuifang*	Aizawl	1472	62	62	100
Mualkhang	Kolasib	507	106	65	61.3
Saihapui K	Kolasib	118	266	114	42.9
Hmawngkawn*	Serchhip	1218	36	36	100
Chekawn	Serchhip	907	49	47	95.9
Chhumkhum*	Lunglei	286	53	53	100
Thlengang	Lunglei	1094	45	39	86.9
Rawlbuk*	Lawngtlai	1201	119	119	100
E.saizawh	Lawngtlai	358	107	81	75.7
Ahmypi	Saiha	1043	42	37	88.1
Old Tisopi*	Saiha	1182	35	35	100
Bawngthah*	Mamit	800	74	74	100
Lengpui	Mamit	412	735	519	70.6
Total			2010	1527	76

Source: Date were gathered from the HH level survey of sixteen villages.

3. Results

3.1. Major Food Security Indicators and their Status

A household level survey on major indicators of food security in the study villages was conducted. These indicators comprise – sufficiency in rice production, rice stock, dependency on market for rice and other food items, land capability, food availability and condition of approach road to the villages. Questions were raised on availability and sufficiency of these indicators at household level (Table 2). Crop production determines food security. Since rice is the main food staple of the people in the study area, we asked questions mainly on rice production, its sufficiency and supply through market. The first question asked of whether rice production is sufficient for carrying livelihoods throughout the year? About 94.6% respondent answered that rice production is insufficient whereas 4.3% households responded that rice production is sufficient throughout the year. Sufficient food supply through market is one of the indicators of food security. Thus, the second question was related to dependency of households on market for meeting rice need. The question asked of how much the households have dependency on market for rice. About 73.9% households answered that they are partially dependent whereas 13.7% households are fully dependent. A small group of households (12.4%) are independent on rice as they produce rice substantially that can meet the household needs throughout the year. We identified rice

stock as food security indicator (Figure 1). Rice stock varies from zero to maximum of five months. It is stocked for the maximum of five months by 20.3% households. About 53.4% households stock it for a month, 19.1 for a week and 7.2% households have no stock of rice. It shows that production of rice is inadequate while it grows twice in a year under wet rice cultivation. Apart from rice, availability and sufficiency of many food items determine food security. The study shows that the other crops/food items grow in the villages are insufficient thus; about 89.4% people depend on market for them. Only 10% households have independency on other food items. Land capability in terms of soil fertility influences crop production. We asked question that the arable land you have is fertile or not, about 49.6% households responded that their cultivable land is fertile to grow crops, suitably. On account of food availability both from crop production and market, about 65.7% households responded for its adequacy. In some villages, food availability is excess and their percentile is 31.6. Infrastructural facilities are the backbone of the economic development of any region or an area. Roads availability and their quality support the households to access the market easily. In the study villages, the condition of approach roads is worst that impedes the people to have sufficient access to market.

Public distribution system is very popular in the studied villages. Food and household commodities are sold in fair rate. Meanwhile, the system is irregular and a large number of households are unsatisfied with its functioning. Each village has its own fair price shop (16) out of which, only 5 shops are irregular.

Table 2. Major food security indicators and their status in the case study villages (16); n=1527

Sufficiency in rice production		
Variables	**Households**	**Percentage**
Very sufficient	1	0.2
Sufficient	65	4.3
Insufficient	1446	94.7
Very insufficient	15	0.9
Dependency on market for rice		
Fully dependent	209	13.7
Partially dependent	1129	73.9
Independent	189	12.4
Rice stock		
No stock	110	7.2
Upto one week	291	19.1
Upto one month	815	53.4
Upto five months	311	20.3
Dependency on market for other food items		
Fully dependent	9	0.6
Dependent	1365	89.4
Independent	153	10
Land capability		
Fertile land	757	49.6
Infertile land	770	50.4
Food availability		
Excess	488	31.6
Adequate	1003	65.7
Inadequate	46	2.7
Condition of approach road to the villages		
Good	852	55.8
Bad	648	42.4
Very bad	27	1.8

Source: Primary collection and calculation of data by the author.

Figure 1. A – Poor faces: children under malnutrition; **B –** Rice stock: bamboo house in a *jhumland*; photo by author

3.2. Production, Consumption and Secure Months of Rice Crops

Rice is the main food staple in Mizoram. It grows both under shifting cultivation and under wet rice cultivation. Sifting cultivation is carried out in the hills as rain-fed while wet rice cultivation is practiced in the valley fills and flood plains. Although, land under rice cultivation is comparatively very less yet, its proportion in the total cropped area is above 50%. Table 3 shows production, annual rice consumption and secured months of rice crops in the study villages. Mean value of annual rice production is 23266 KG. In terms of annual rice consumption, mean value is 71163 KG which denotes that rice consumption is three times higher than production. Secured months for rice consumption were calculated. Out of the total 16 villages, only two villages have about 22 months rice storage while average secured months for all villages are 3.8, which presents food insecurity situation (Table 3).

Table 3. Production, consumption and secured months of rice crop

Variations	Minimum	Maximum	Mean	Std. Deviation
Rice Production (KG)	210	206250	23266	49841
Annual Rice Consumption (KG)	24132	380760	71163	86030
Monthly Rice Consumption (KG)	2011	31730	5930	7169
Secure Months	0.1	22	3.8	5.6

Source: Primary collection.

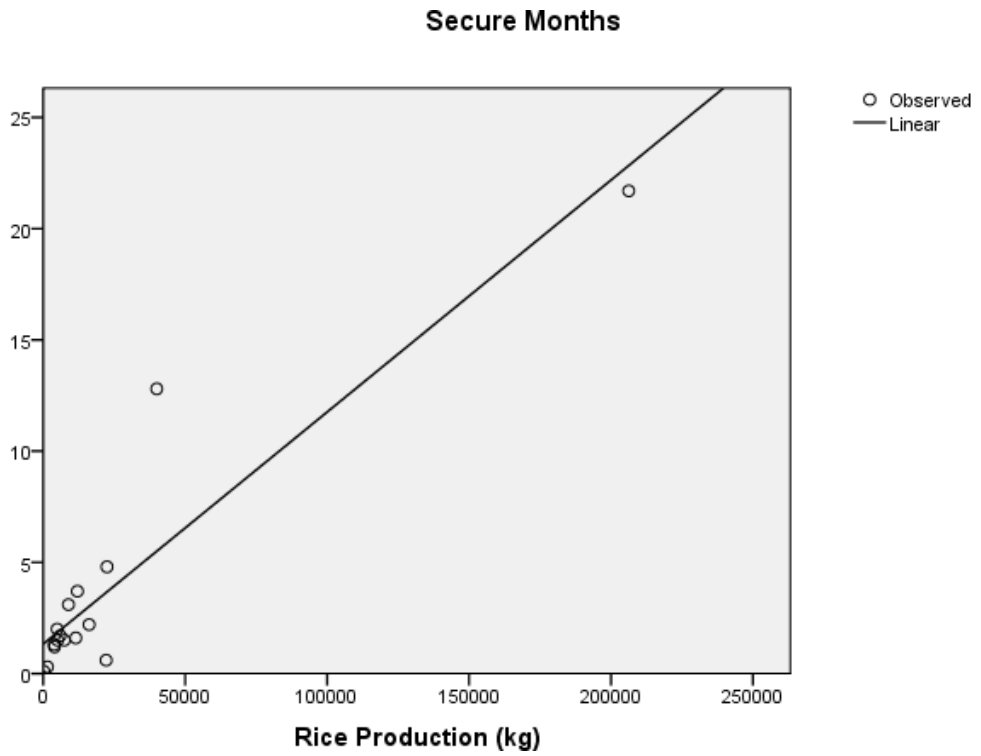

Figure 2. Correlation between rice production and secure months

Figure 2 presents rice production and secured months. It shows that rice is secured maximum for the five months while production of rice is maximum 50,000 kg in 14 villages. In two villages, production and secured months for rice is higher. The people depend on market for rice in rest of the months of year.

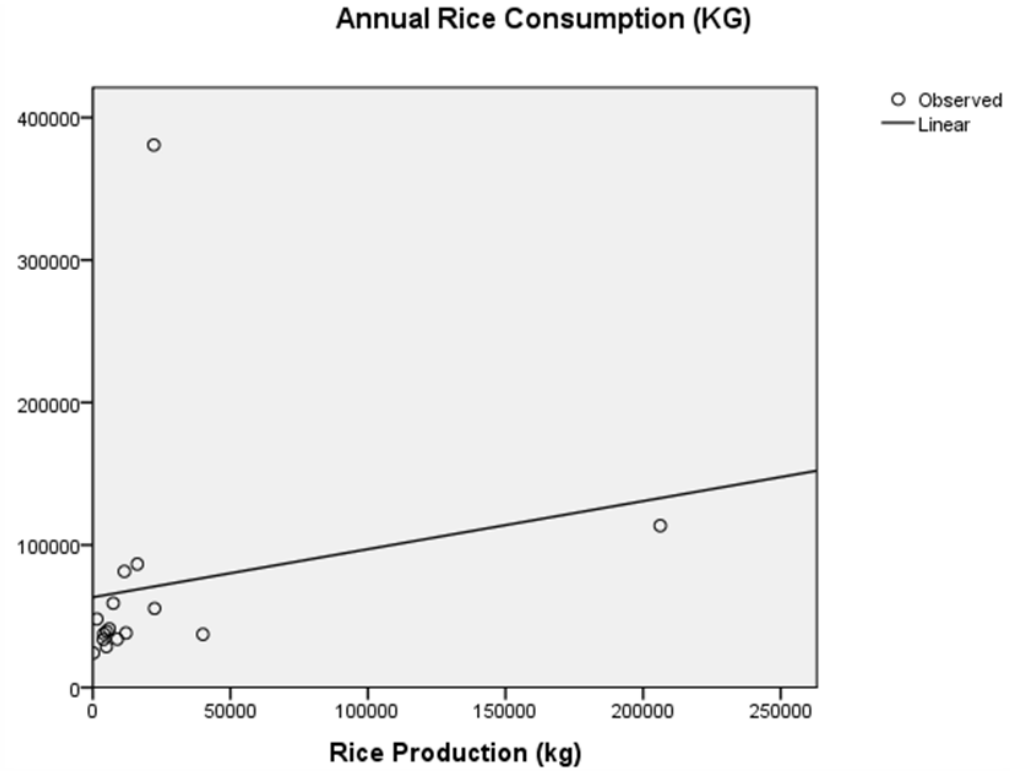

Figure 3. Correlation between annual rice production and rice consumption

Figure 3 depicts that rice production is maximum 50,000 kg in all villages except a village where rice production is above 20,000 kg while rice consumption is above 100,000 kg. In a village, rice consumption is higher than 300,000 kg. Correlation between annual rice production and rice consumption depicts that rice consumption is quite higher than rice production and the ratio in 2:1.

3.3. Regulation and Satisfaction of Food Supply

The two aspects are considered on the regulation and satisfaction of food supply. The first one is public

distribution system which includes number of fair price shop, their status and people's satisfaction. In the second aspects, we described the location of villages in terms of their distances from the state capital, from the road heads and the quality of roads. We noticed, out of the total 16 fair price shop, 11 shops are irregular. Only five are in functions. When we asked the local people whether they are satisfied with these shops, most of them were dissatisfied.

Distances of the case study villages from the state capital of Aizawl can be determined as one amongst the indicators of socio-economic development. Longer is the distance; lower is the socio-economic status because, the level of infrastructural facilities decrease along with increase in distance of the villages from Aizawl city centre. The people's major occupation is primitive agriculture and they mainly rely on the output of agriculture to carry their livelihoods sustainable. The villages, located near the state capital, have the opportunities to diversify economic activities through involvement in the various occupations. Table 4 presents location of the villages from Aizawl, road head and the conditions of road. About 50% study villages are located in the remote areas and their distance from Aizawl city is above 200 km. Only few villages (18%) are located within 50 km in distance from Aizawl city. Distance of the villages from the road head is also illustrated. About 44% villages lie on the road head while six per cent villages are located above 30 km away from the road head. Average distance of the villages from road is 15 km. The quality of road is not good and about 44% villages characterise with low quality roads.

Table 4. Regulation and satisfaction of food supply through public distribution system

Number of fair price shop	**16 (each in each village)**
Status	Regular: 5 Irregular: 11
People's satisfaction	Most of the people are unsatisfied with the functioning of fair price shops
Villages and their distances from Aizawl city	**Percentile of villages**
Located within 50 km from Aizawl	18
Located between 50 and 100 km	25
Located between 100 and 200 km	7
Above 200 km	50
Distance of the villages from road head	
On the road head	44
Located within 10 km	25
Located between 10 and 20 km	13
Located between 20 and 30 km	12
Above 30 km	6
Road quality leading to the villages	
Metalled	56
Unmetalled	7
Jeep road	37

Source: Primary collection of data.

3.4. Chronic Poverty and Malnutrition

We calculated poverty of surveyed households using planning commission methodologies developed by Suresh Tendulkar committee (2012). This committee fixed Rs. 1066 per capita per month income for Mizoram, which is equivalent to 18 USD. The people whose income is less than this figure come under below poverty line. Each village contains three sections of population. The people of the first section have medium income and they cover 48.7% of the total population. The second group comprises the people who live below poverty line represent 33.7% population. About 17.6% people suffer from chronic poverty, forms third group. As a whole, 51.3% people live below poverty line in 16 villages that we studied. The central government has launched 'Antyodaya Anna Yojna' scheme for the people living below poverty line. The term 'Antyodaya' denotes to upliftment of the last person of the society and the scheme provides free food to this category people. Table 5 shows village wise poverty and chronic poverty.

Table 5. Village wise poverty and chronic poverty (n=1527)

Villages	Total household surveyed	BPL (%)	AAY (%)	BPL+AAY (%)
Tualcheng	136	81.6	1.5	83.1
Pamchung	57	36.8	49.1	85.9
Nausel	53	15.1	54.7	69.8
Hmuifang	62	58.1	0	58.1
Mualkhang	65	76.9	4.6	81.5
Saihapui K	114	3.5	85.9	89.4
Hmawngkawn	36	83.3	0	83.3
Chekawn	47	27.7	0	27.7
Chhumkhum	53	41.5	13.2	54.7
Thlengang	39	66.7	17.9	84.6
Rawlbuk	119	36.9	16.8	53.7
E.Saizawh	81	39.5	17.2	56.7
Ahmypi	37	48.6	10.8	59.4
Old Tisopi	35	37.1	8.6	45.7
Bawngthah	74	28.4	17.6	46
Lengpui	519	10.8	1.8	12.6
Total	1527	33.7	17.6	51.3

Source: Field Survey.

Table 6 shows summary of minimum, maximum and mean value of the people living below poverty line. Village wise list of the people living below poverty line are 4 minimum and 111 maximum while mean value is 33.7. Similarly, village wise mean value of the people living below chronic poverty is 17.6.

Table 6. Summary of minimum, maximum and mean value

Variables	Minimum	Maximum	Mean	Std. Deviation
Total households surveyed	35	519	95.5	117.2
No. of BPL* family	4	111	33.7	25.8
No. of AAY** family	0	98	17.6	25.3

*BPL: Below poverty Line, ** AAY: Antyodaya Anna Yojana (people living under chronic poverty).
Source: Field survey.

Income is one of the determinants of poverty. Lower is the income higher is the poverty and vice-versa. We calculated per capita income of 1,527 households grouped them into five categories from <5,000 to >20,000. The highest number of households (38%) falls under category of Rs. >20,000 per capita income (Table 7). About 33.4% households have Rs. 5,000-10000 per capita income. We calculated minimum, maximum and mean value of per capita income. Minimum per capita income was recorded Rs. 3,398, maximum per capita income Rs. 26,503 and mean per capita income Rs. 11,637. When we compare it with Mizoram and national average, it is tremendously less as Mizoram has above Rs. 40,000 per capita income and national average is Rs. 38,169.

Table 7. Per capita income group and number of households in each category

Per capita income group	Number of households*	%
< 5,000	53	3.5
5,000-10,000	510	33.4
10,000-15,000	211	13.8
15,000-20,000	172	11.3
>20,000	581	38
Average: 11,637	1,527	100

*Average of number of people in a household.
Source: Field survey.

4. Discussion and Conclusion

Food insecurity and poverty are the growing issues facing mainly by the developing countries. Both food insecurity and poverty are related to each other. Food insecurity gives rise to poverty, which leads to malnutrition, poor health conditions and high mortality rate. The data we collected reveals that food security status in Mizoram is lessening. Rice meets 33% state requirement. During the recent past, area under shifting cultivation decreased by 58%. Per ha yield of rice decreased by 36.8% during the period 2005-2010. With growing population (decadal growth 22.8), food availability decreased during the recent past. Although, the State has plenty of natural resources – forest (92%), water (many perennial rivers) and panoramic landscape (4% cropped land) yet, it could not harness natural resources for maintaining food security.

Northeast India received 3 million tones food deficit and 1.92% decrease in food grain production during the period 2005-2010. As noted, 17% people live below poverty line in developed countries. In India, this figure is 29.8% and Mizoram has 21.1% people live below poverty line (2011). Case study of villages shows that 33.7% people live below poverty line and 17.6% people live under chronic poverty. This figure is the highest when we compare it with the state and the nation. As a result, infant mortality rate in the study villages stand for above 200. According to estimation, about 80% extreme poor live in South Asia.

In Indian context, per capita calorie intake is less (2058 Kcal) than required level (2400 Kcal). This is also with the case of the most of the developing countries. We have noticed from the study villages that per day per capita calorie intake is very less in comparison to the other parts of India (1703 Kcal). The major driving forces affecting low calorie intake, include low per capita income (average Rs. 11637), low output from traditionally grown crops and less opportunities to enhance income. The study reveals that rice crop is not sufficient to carry livelihood sustainably as 94.6% respondent noticed, and rice is available only for the three months in a year. Although, 73.9% people depend on market for meeting food requirement yet, regulation of food supply through public distribution system is inadequate. It can be observed through the fact that out of the total 16 food supply shops, only 5 are regular.

It is interesting to note that 51.3% people of the study villages are living below poverty line. This figure is absolutely very high in comparison to other states of India. Some villages obtain chronic poverty with number of people suffering more than 40%. In this study, we noticed that the villages which are remotely located and infrastructural facilities are less, chronic poverty is existed high.

The State Government initiated new land use policy to enhance crop production and to reduce poverty. This initiative brought many measures for increasing per capita income and attaining food security. About 3711 ha land was directly brought under oil palm cultivation. An increase of 11% gross state development products was noted during the 11th plan period (2007-12) in Mizoram. Likewise, Dairy sector received 3-4 times increase. Thus, this new initiative of state government worked as a driver of poverty reduction.

Mizoram has abundance of natural resources upon which livelihood is based. These resources mainly include land, forest and panoramic landscape. The use pattern of abundance natural resources is under developed that leads to economic backwardness of the region. Agriculture is the main occupation of the people while, income from its cultivation is severely less. It characterises subsistence farming. Forest products dominate in livelihood options, as a number of villages located in the dense forest areas practicing shifting cultivation. Further panoramic

landscape provides base for tourism development. Even though, the State suffers from food insecurity, poverty and malnutrition. The result shows that food insecurity and poverty in the study villages are acute and consequently mortality rate is high. There are the cases in the villages where infant mortality rate is above 200. Infrastructural facilities are lagged behind mostly due to undulating terrain and fragile landscape. The villages we studied are remotely located, having least infrastructural facilities. The government run programmes for rural development often do not work properly. Further, farming upon which the livelihoods of the people are dependent, is limited to hill slope with small arable land that characterises shifting cultivation. The public distribution system for food supply is irregular. These impede to acute shortage of food and the people suffer from poverty and malnutrition. Our study proposed that sustainable use of natural resources will lead to food security and will reduce poverty. Policy measures through government intervention and people's participation in development activities may lead to poverty reduction and to attain food security. Development of biomass-based land resources such as cultivation of cash crops – fruits, vegetables, flowers and medicinal plants will enhance food security and reduce poverty. Sustainable tourism development and water resource management will further reduce poverty. Use of forest resources – timber and non timber products can increase income and thus can reduce poverty.

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