FOOD SECURITY IN RURAL ASSAM:
A CASE STUDY IN KAMRUP DISTRICT

1.1 INTRODUCTION:

Security of food, in simplest terminology, implies adequate intake of food by every individual without any difficulty or anxiety. The Universal Declaration of Human Rights in 1948 recognised right to food as a core element of an adequate standard of living. Following this, and more specially from world food crisis of 1972-74, food security became an important “organizing principle” in development. Important definitions of the concept can be traced as follows:

1974 World Food Conference defined food security as “Availability at all times of adequate world supplies of basic food-stuffs........, to sustain a steady expansion of food consumption....... and to offset fluctuations in production and prices”.2

Food and Agricultural Organizations (1983) defined food security as “Ensuring that all people at all time have both physical and economic access to the basic food they need”.3

World Bank (1986) defined food security as “Access by all people at all times to enough food for an active and healthy life”.4

The 1996 World Food Summit redefined food security as “Food security exists when all people, at all times, have physical and economic access to

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sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.⁵

In 2001, the FAO Expert Consultation on Food Security gives a working definition of food security: Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Household food security is the application of this concept to the family level, with individuals within households as the focus of concern.⁶

Thus, the concept of food security has evolved, developed, multiplied and diversified over the years. In its wider connotation, the concept has four dimensions: availability, accessibility, utilisation and vulnerability. Domestic agricultural production and food imports are the two important components of availability of food. The availability issue of food security dominated during 1970s. Primary concern, at that time was of national and international food security, defined in terms of the level and reliability of aggregate food supplies. In these days of globalization and liberalization of agriculture, the issue of availability of food has again become a cause of concern. So many agricultural land all over the world have been diverted from producing foodgrains to either bio-fuels and other cash crops or to non-foodgrain food crops. These basically concern for food security of the undeveloped and developing countries because of their growing population as well low agricultural productivity.

Access to food has two dimensions: physical and economic. The economic access to food is largely determined by the household’s purchasing power of taking a quality diet and food subsidies; either through direct or indirect through various programmes. Obviously, poor people with their limited resources suffer from lack of access to food. Low purchasing power remains a serious


constraint to household food and nutrition security, even if food production picks up.

The utilization dimension of food security is concerned with the nutritional requirements of the household members, based on their age, sex, and body weight and activity level. The pattern of utilization of food at the household level generally depends on 3 factors: cultural factors, distributional factors and absorption possibilities. Cultural factors determine diet preferences, nutritional knowledge and caring practices within a household. Intra-household distribution of food determines distribution of food within the household. Again, pattern of absorption of food depends upon quality of water and sanitation, health and the quality of foods itself.

The fourth concept that is risk and vulnerability is increasingly becoming accepted. Risk may be due to climatic fluctuations such as floods, droughts, earthquakes, cyclones etc; or due to conflict, or due to job loss, or due to epidemic disease. Policies at global and national level may also bring risk and uncertainty to both food and livelihood security of the mass. It can also disrupt any one of the first three factors. Hike and volatility of food prices and other essential items of consumption in recent years has become a threat of losing food security of the poor people worldwide. Casual mood of employment too has brought risk and uncertainty to food as well as livelihood security.

Food insecurity exists when people do not have adequate physical, social or economic access to food as defined above. Food insecurity, thus, is just an opposite situation of food security. It may be due to lack of production and availability, or may be due to low purchasing power for getting the available food, or may be because of lack of improper utilization of food in the body. Food insecurity refers to lack of access to enough food on day-to-day basis, regardless of the season or time of the year. Food insecurity and malnutrition problems in developing countries have received wide attention due to their immediate impact

on the welfare of population and development of countries in general. According to the report of Food and Agricultural Organisation (FAO 2003), worldwide around 852 million people are chronically hungry due to extreme poverty, while up to 2 billion people lack food security sporadically due to varying degrees of poverty. Six million children die of hunger each year-17 thousand every year (FAO 2009).

1.2 FOOD SECURITY IN INDIA: THE ISSUE OF AVAILABILITY:

As a welfare state, government of India, since its inception, has been trying to provide basic necessities to its citizens. The country was food deficit one before independence. The Bengal famine (1943) compelled the government to import food. United States largest food aid programme at that time named Public Law 480 helped the countries to meet the deficits in domestic food production. As the second World War broke out, import prices were going on rising. Countries had to adopt strategies for improving domestic production. During 1970s Green Revolution Technologies helped India to augment production of rice and wheat. Moreover, government adopted price support policies for the farmers. As a result of adoption these strategies, India not only has attained self-sufficiency in production from 51.99 million tonnes of food grains in 1950-51 to 228 million tonnes in 2009-10 but also has turned out to be a net exporter of it. At present the country has 75 million tonnes of food grains as buffer stocks. As per agricultural statistics of Government of India, per capita availability of food commodities has been increasing (except pulse). The increase in production has much been higher for horticultural, fish and livestock products, milk etc. The per capita availability of non food grains food commodities witness a considerable increase which helped in catering to the diversified food needs of the people.

During this course, agriculture in Assam also witnessed a gradual improvement from the past. As per Economic Survey 2011, growth rate of

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agriculture and allied for the state in 2009-10 was 6.49 percent. Due to improved agricultural practices, the state has achieved a record rice production in last few years. As per final forecast for the year by the Department of Agriculture Government of Assam, rice production will touch 4715676 tonnes in 2011-12. Forecasted amount for wheat is 48592 tonnes; while it is 682596 tonnes for potato, 68365 tonnes for pulses. Fisheries sector also showed a growth rate of 5.23 percent in 2010-11. Still, the state has achieved self sufficiency only in production of rice.

Besides augmenting production, government also made arrangements for distribution of the produced food through time and space. Moreover, government began to provide procured food from the farmers to the poor at affordable through Public Distribution System (PDS). In 1965 Food Corporation of India (FCI) was established and it was given entire responsibility of procurement, storage and distribution of food. Government made various reforms in PDS since its inception. In 1992, PDS was extended to remote and backward areas of the country under Revamped Public Distribution System. Again it was made targeted to the poor in1997 under Targeted Public Distribution System. Moreover, the government is going to enact National Food Security Bill 2011 very shortly which will assign legal entitlement to food for the citizens of the country.

As a result of these strategies, incidence of hunger (households not having two-square meal a day) has declined in the country. According to quinquennial surveys of NSSO, the incidence of hunger has declined from 17.0 percent in 1983 to mere about 1.0 percent in 2009-10 in rural India and from 6.5 percent to 0.3 percent in urban India. During the same period, percentage decline for Assam is found from 16.1 percent to 5.3 percent (rural urban combined).

1.3 DECLINE IN CALORIE INTAKE VS. CALORIE DEPRIVATION:

However, as against this self-sufficiency and bright scenario, there is widespread poverty and malnutrition. Reports of starvation death and severe malnutrition regularly appear in the media. Global Hunger Index (2008) placed India in 66th rank among 88 countries in terms of malnourishment. It ranked India
slightly above Bangladesh and below all other South Asian nations. One-fourth of the population is estimated to be absolutely poor and remain unsure about accessing their daily bread. In terms of human development too India’s rank is too low among the countries of the world. India is the home to one-third of the world’s undernourished children. National Family Health Survey\(^9\) estimated that the share of underweight children (under 3 years) in rural India 23.0 percent and the share of stunted children (under three years) is 45.5 percent. Among women in the age group of 15 to 49 years, 58% were anemic and 39% had below normal Body Mass Index (BMI). 68 out of 1000 children in India die before the age of one year.

The India State Hunger Index\(^10\) placed Assam among the “alarming” states in terms undernourishment. Madhura Swaminathan Research Foundation\(^11\) in collaboration with World Food Programme prepares food security map of both rural and urban India and accordingly, has given a broad indicative picture of the level of food security of different states of the country. According to their report, Assam is among the “most food insecure” states of India.

Again, as per various rounds of reports of NSSO, between the period from 1972-73 to 2009-10, per capita per day calorie intake has declined in rural India, from 2266 kilocalories to 2147 kilocalories. For urban India, per capita calorie intake increased from 2107 kilocalories in 1972-73 to 2123 kilocalories in 2009-10. In fact, for both rural and urban India, per capita calorie intake has declined continuously from 1972-73 to 2004-05. However, from 2004-05 onwards, it started to increase for both rural and urban India. However, per capita calorie intake of rural India still falls below the level of 1972-73.

\(^9\) NFHS-3: "Report of The National Family Health Survey-3" Volume-1, Mumbai, IIPS.
The decline in calorie intake is attributed by many scholars to change in consumption pattern. According to them, people now a days has gone in favour of non-foodgrains to other food items due to decline in energy requirement because of sedentary lifestyle, increasing mechanisation of agricultural operations and same domestic activities and increasing use of mechanised mode of transport, particularly in rural areas.

Contrary to these arguments, other group of investigators opined that there cannot be a generalised comment regarding decline in calorie intake for the entire population. According to estimates based on unit level data from NSS on consumer expenditure for 38th and 66th Rounds, Kumar et. al. (2012) found that although self reported hunger has almost vanished in most of the states, nutritional deficiency continue to persist across the states and basically among the poor. For the poor, incidence of nutritional deficiency has declined from 53.8 percent in 1983 to 50.9 percent in 2009-10. Thus, half of the population is undernourished. The percentage decline for the rich is from 8.7 percent to 7.5 percent. They also found wide difference in the intake of calorie and protein on continuous basis across states, locations (rural and urban) and income classes (poor and rich). For the state Assam, in their estimates, incidence of undernutrition in terms of calorie, protein and fat has declined from 32.6 percent to 19.9 percent, from 47.4 percent to 34.8 percent and from 50.0 percent to 12.0 respectively in the two periods. The corresponding decline for the country as a whole are found from 30.3 percent to 21.1 percent, from 32.5 percent to 27.2 percent and from 30.0 percent to 6.2 percent respectively.

Moreover, poor has higher calorie-income elasticity than the rich. Accordingly, prevalence of undernourishment is found higher for the lower income households. Prevalence of undernourishment is more than 50 percent in rural areas for nearly all states and it is gradually increasing. For urban areas, the same is found much lower than in rural areas in most states; also has found declined marginally. Similar relationship has been found for the poor and the rich. In spite of this, there is found improvement in diet quality across states as well as across income groups. The percentage of calories derived from cereals is declining over time for most of the states. Intake of coarse cereals has been substituted by more “superior” rice and wheat. This observation is based on data from NSSO excluding Assam and other few states.

In Eleventh Plan review on food security, Government of India admits that the citizens are suffering from deprivation of calorie on a large scale. Government has identified basically two factors for this: decline in per capita cereal production and stagnant income and consequent decline in budget share for food. Cereals are a major source of energy intake for the Indian population. Average per capita cereal consumption has declined in both rural and urban areas between 1971-72 and 2004-05. Consumption of non-cereals has not increased so much to make up for this decline. Moreover, government has found PDS as failure in serving the second objective of making food grains available to the poor. So the Plan review assesses the PDS in terms of rupees transferred.

Contrary to stagnant income, Suryanarayana (1995) found increase in consumption expenditure (at constant prices) for the rural population as a whole by 18.88 percent: it increased by 32.02 percent for the poorest and by 28.05 percent for the non-poor.

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percent for the second poorest decile group between 1970-71 and 1988-89. As regards the urban sector, the profile of increase in per capita consumer expenditure for different decile group was similar to that obtained for the rural one. Moreover, as regards to decline in consumption patterns involving a decline in budget shares for cereals and other essential food items,21 opined that as the estimation of budget shares are at current prices, such estimates could reflect changes in relative prices rather than consumption patterns. Cereals still remains as primary source of energy for the poor. Consumption of rice has increased for the poorest three decile groups for both rural and urban India between 1972-73 and 2004-05. Percentage increase has been found highest (61.13 percent) for the first poorest decile groups. Of course, both poor and rich have reduced the consumption of coarse cereals. The poorer decile groups in both rural and urban area have substituted coarse cereals by superior cereals; while rich has gone for non-cereal food items. Accordingly, average per capita cereal intake has decline for the entire population during the sample period under consideration. Calorie intake of the poor although has increased during the period between 1971-72 and 2004-05, it falls short of the norm used for defining the poverty line of the country. Moreover, the diversion from coarse cereals to superior rice do not account for change in consumption pattern of the poor.22 Due agricultural growth strategy, taken in favour of rice and wheat, coarse cereals have become unavailable in the market. Thus, mean cereal/calorie intake cannot be a robust estimator of the average when the distribution is skewed.

Tools used for assessing self perception of food adequacy in surveys of NSSO are inadequate.23 Moreover, male respondents may feel hesitation to admit that they are not capable of providing even two squares meal a day to their dependents.24

22 M.H. Suryanarayana (2011): ibid p 44.
The bottom 80 percent of rural households and bottom 40 per cent of the urban households respectively spend more than 60 per cent of their total expenditures on food. Therefore, magnitude of food insecurity by the calorie intake / food share criterion must be more than the incidence of poverty in the country. Moreover, there is found mis-targeting of APL and BPL households including Assam. The first four Monthly Per Capita Expenditure Classes (MPCE) of 61st round of NSSO survey account for the poorest thirty per cent of the population. In spite of these, more than half of the households in these MPCE classes do not have the Antyodaya or BPL ration cards. Mis-targetting is found more acute in rural areas than in urban areas.

Moreover, on the basis of discrepancy of data between “offtake” from Food Corporation of India and NSS data on per capita monthly purchase of wheat and rice from PDS, Kumar et. al. has calculated extent of diversion of PDS grains. They found alarmingly high percentage of diversion (66.5 percent) in Assam. Corresponding leakage for the country was found as 18.3 percent. Regarding diversion, few scholars consider the possibilities of under-recording of PDS grain purchase in NSS data. There are other reports of diversion of PDS grains also.

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27 Kumar et. al. (2012): op.cit. p 457.
Based on NNS data from 27th round (1972-73) to 55th round (1999-2000), Chand (2007a)\(^{35}\) found that inequality of consumption expenditure rural areas has declined in all the major states of India except Assam and Tamil Nadu. In these two areas inequality increased in both rural and urban areas. Assam is the only state in 2000 where rural-urban disparity is highest.

1.4 THE PROBLEM:

The 66th round (2009-10) of NSSO reveals that percentage of food expenditure to total monthly per capita food expenditure in rural Assam (64.4 percent) is not only higher than that of urban Assam but also than that of the country as a whole (rural and urban). This percentage of food expenditure is the second highest among the states, next to Bihar. Also, percentage expenditure on food of both bottom and top percentile classes (68.9 percent 59.0 percent respectively) of rural Assam is higher than the corresponding classes of rural India (64.9 percent and 46.0 respectively). Contrary to this, per capita per day caloric intake in rural Assam (2120 kilocalories) is lower than that of urban Assam (2176 kilocalories) and rural India (2147 kilocalories) as well urban India (2123 kilocalories). As per various rounds of NSSO, rural Assam always (except 61th round, Table 1.1) shows a lower per capita calorie intake than that of rural India.

Table 1.1: Estimated Per Capita Per Day Calorie Intake of Assam (Rural) and India (Rural)

<table>
<thead>
<tr>
<th>Locations</th>
<th>Estimated per capita calorie intake (Kcal) per day in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assam (rural)</td>
<td>2074</td>
</tr>
<tr>
<td>India (rural)</td>
<td>2266</td>
</tr>
</tbody>
</table>

Source: NSSO reports (various rounds)

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Moreover, diversity of diet is also found to be low as bulk of calorie intake comes from cereals only. Per capita intake of protein and fat are also found low. Two rounds of NSSO (taken without any prior assumption) clear the fact (Table 1.2). As Table 1.2 clears, per consumer unit calorie intake (of average, top and bottom percentile classes) of rural Assam increase in periods between 1993-94 and 2009-10. However, it still falls below the national average (rural) in both the periods. Again, in 2009-10, 70.4 percent of bottom percentile class in rural Assam is found with per consumer unit calorie intake less than 80% of the norm of 2700 kilocalories. This percentage is also higher than the national average (rural) of 62.3 percent. Per consumer unit intake of protein and fat in rural Assam are also found to be lower than that of rural India in both the rounds.

**Table 1.2: Comparison of Calorie Intake in Assam and India**

(in Two Rounds of NSSO)

<table>
<thead>
<tr>
<th>Indicators related to food consumption</th>
<th>50th round (1993-94)</th>
<th>66th round (2009-10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assam (rural)</td>
<td>India (rural)</td>
</tr>
<tr>
<td>Per consumer unit calorie intake (kcls)</td>
<td>Average</td>
<td>2406</td>
</tr>
<tr>
<td></td>
<td>Bottom 10%</td>
<td>1369</td>
</tr>
<tr>
<td></td>
<td>Top 10%</td>
<td>3338</td>
</tr>
<tr>
<td>Percentage of households with per consumer unit calorie intake below 80% of 2700 calories (in 1000 households)</td>
<td>Average</td>
<td>27.8</td>
</tr>
<tr>
<td></td>
<td>Bottom 10%</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>Top 10%</td>
<td>0.0</td>
</tr>
<tr>
<td>Percentage of per consumer unit calorie intake from cereals</td>
<td>Average</td>
<td>76.4</td>
</tr>
<tr>
<td></td>
<td>Bottom 10%</td>
<td>80.1</td>
</tr>
<tr>
<td></td>
<td>Top 10%</td>
<td>65.4</td>
</tr>
<tr>
<td>Per consumer unit protein intake (gram)</td>
<td>Average</td>
<td>66.2</td>
</tr>
<tr>
<td></td>
<td>Bottom 10%</td>
<td>46.9</td>
</tr>
<tr>
<td></td>
<td>Top 10%</td>
<td>91.2</td>
</tr>
<tr>
<td>Per consumer unit fat intake (gram)</td>
<td>Average</td>
<td>25.5</td>
</tr>
<tr>
<td></td>
<td>Bottom 10%</td>
<td>9.9</td>
</tr>
<tr>
<td></td>
<td>Top 10%</td>
<td>49.5</td>
</tr>
</tbody>
</table>

**Source:** respective NSSO rounds
These findings are often contrary to the level of self-reported hunger. Moreover, there has been found several reports of malfunctioning of the Public Distribution System in the state. Observations discussed above are basically based on secondary sources of information. In Assam, so far the available literature is concerned; there have not been found any research work exhibiting food security status of the rural households. Considering this gap, a study has been conducted as part of doctoral research. Basically from economic accessibility of food, this micro level study tries to give an assessment of food security level of the people residing in Kamrup (rural) district of Assam. As per 2011 census, a high 85.92 percent of total population of the state lives in rural areas. It takes three community development blocks of the district as the study area. Kamrup (Rural) is the only rural district of the state comprising 90.64 percent rural population.

1.5 REVIEW OF LITERATURE:

A detail account of the review of literature regarding the concept along with associated issues has given in Chapter 2. The review is arranged in following three modules:

1. Individual perspectives on food security.
2. Issues related to household food security.
3. Globalisation, liberalisation of agriculture and food security.

Regarding of individual perspectives on food security, review has been done considering both the demand and supply aspects and multidimensional aspects. A detailed account of household food security along with various issues associated to it, are discussed in the second module. Ongoing globalization and liberalization of agriculture and its impact on food security, as per various scholars has been discussed in module three.
1.6 OBJECTIVES:

The specific objectives of the study are:

1. An assessment of the level of food security. Level of food security of different sections of the society has been worked out.

2. Identification of the factors affecting the level of food security.

3. An assessment of functioning of public distribution system – the major social safety net programme of providing food security.

1.7 RESEARCH QUESTIONS/HYPOTHESIS:

The hypothesis taken up for testing in course of the study is:

"Government schemes have not been able to make much headway in alleviating food insecurity of the rural mass"

1.8 METHODOLOGY:

1.8.1 Data Sources:

The study is based on both secondary and primary data. The main sources of secondary data are the publications of government agencies such as National Sample Survey Office, Government of India, Office of the Census of India, Directorates of Food and Civil Supplies, Agriculture and the Economics and Statistics, Government of Assam and Government of India. Besides, considerable amount of unpublished statistics have been gathered from office of agriculture, Kamrup district; office of Development Blocks of Dimoria, Rani and Hajo; office of co-operative societies located in three blocks.

The micro level analysis is mainly based on primary data collected by carrying out field survey. The sample for this purpose has been selected through a process of mixed sampling. The details of sampling procedure have been outlined in section 5.3 of Chapter 5.
1.8.2 Methods:

A detailed account of various methods used by other scholars for measuring access dimension of food security (both for India and abroad) has been detailed (sections 5.1 and 5.2) in Chapter 5. The present study tries to find out the present level of food security from primary data sources. Two indicators have been used to assess the level of food security:

a) Per Consumer unit Calorie Intake (PCCI)
b) Household Dietary Diversity Score (HDDS)

For calculating PCCI, data on actual amount of food intake has been taken from the sampled households. Survey has been conducted as per the guideline prepared by Smith and Subandoro (2007) of International Food Policy Research Institute. Again, quality of diet of the surveyed households has been assessed from the Household Dietary Diversity Score (HDDS). It is a simple sum score of the number of food items consumed by members of a household over a recall period. A detail account of the methods used has been given in section 5.4 of Chapter 5.

1.8.3 Analysis of Data:

Data thus collected and were processed and tabulated and then analysed using statistical and econometric tools. For analysing the level of food security per consumer per day calorie intake has been calculated for each household, based on average nutritative value of Indian foods. Calculated per capita calorie intake, thus obtained, has been compared with the 2731 kilocalories; that is, with recommended calorie intake of an adult man doing moderate activity by Indian Council of Medical Research. Of course, final assessment of food security/insecurity status of a household has made by comparing with 2700 kilocalories; leaving 31 calories for the sake of comparison with the NSSO estimates. Households with intake above the recommended level have been taken

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as food secure and food insecure otherwise. In terms of diet quality, a household with index greater than 0.5 calculated from HDDS is considered as food secure and food insecure otherwise.

For identifying the factors affecting the level of food security linear regression analysis is run. Index calculated from the amount of per consumer unit calorie intake of the households has been taken as dependent variable. Various socio economic characteristics of the sample households are taken as explanatory variables.

For assessing efficacy of the Public Distribution System, information such as PDS coverage, share of PDS in total consumption, food security among different beneficiary groups, targeting etc. have been used.

1.9 CHAPTER LAYOUT:

Chapterisation of the thesis is done as follows:

Introduction

a) Chapter two: Review of literature. This chapter details review on food security which is done in three modules: individual perspectives on food security; issues related to household food security; and issues related to globalization, liberalization of agriculture and food security.

b) Chapter three: Production and availability of food in Assam. This chapter depicts the agriculture scenario of Assam with special reference to production of foodgrains.

c) Chapter four: Public policy and food security. A detailed account of the evolution of Public Distribution System in India and the functioning of the same in the country as well as in the state is presented in this chapter.

d) Chapter five: Methodology. A detailed account of various methods used by other scholars for measuring access dimension of food security, methods used in the present study, sampling and data collection procedure and analysis of the same has been given in this chapter.

e) Chapter six: A brief profile of the study area. This chapter gives an account of the geographical, socio-economic and demographic profile of Kamrup (rural) district. Moreover, a macro level assessment food security
of the district has been made with reference to production of food as well as working of the public distribution system in the district.

f) **Chapter seven**: Profile of sample households. This chapter gives an account of the socio-economic and demographic characteristics of the sample households.

g) **Chapter eight**: Level of food security and its determinants. Level of food security of the sample households along with the factors affecting the same has been detailed in his chapter.

h) **Chapter nine**: Public policy and food security: message from the field. This chapter investigates the functioning of the public distribution within the sample households.

i) **Chapter ten**: Summery of findings, recommendations and conclusions. A brief summary of the findings, recommendations and conclusions drawn from the study has been given in this chapter.

**Bibliography**

1.10 **LIMITATIONS:**

The study suffers from inherent limitations of sampling procedure. Findings may vary if it is undertaken at different cross-sections of population of the State. Moreover, entire analysis is basically based on per consumer unit calorie intake and its comparison with certain recommended level. In fact, requirement of calorie itself varies from person to person depending on his/her age, sex body weight and activity level. It also varies even within the same individual at different time periods. In addition to these, the researcher feels inadequacy of taking subjective information from the respondents in assessing their food security status. Intra household issues of food security also have not been addressed. Still, it is hoped that the study will provide small area statistics for eliminating hunger and under nutrition of the region.