CHAPTER II

LIVELIHOOD IN ASSAM: THE VULNERABILITY

From previous discussion on the sustainable livelihood approach and on DFID model it is understood that the vulnerability is one of the key factor affecting livelihoods. As explained in earlier chapter, ‘sustainable livelihood’ requires enhancement of assets and also ability to cope shocks and stresses thus, vulnerability context is integrated within the approach. The definition of livelihoods adopted by Carney (1998), suggests the need to understand the livelihood strategies and vulnerability of the poor as the starting point in a livelihoods analysis. DFID, Chambers and Moser have placed vulnerability in the centre for understanding the condition of the poor. Vulnerable factor influence the external environment in which people live and they have limited or no control on them. According to Devereux (2001), vulnerability context forms the external environment in which people exist and gain importance through direct impacts upon people’s asset status. DFID argued that vulnerable factors are important as they have direct impact upon asset status of people and on the options open to them in pursuit of beneficial livelihood outcome.

Sustainable livelihood approach focuses two main things in the context of vulnerability-

a. Exposure to trends/shocks/changes
b. Sensitivity of livelihoods to these factors.

According to the responses to these forces the ‘poor’ becomes more or less relative poor. Economic situation of a household is thus rarely static. Changes occurring in the living may be short term fluctuations into surplus or deficit or may be part of long term trajectory. Mainly it can be of two kinds-

(i) Accumulation (upward economic mobility) is when household increases its assets balance over time and moves upward out of poverty.

(ii) Impoverishment (downward economic mobility) is when a household runs consistently at a deficit with a diminishing assets balance taking into (deeper) poverty. Downward mobility is closely related to household
vulnerability. Some households are much more vulnerable to shocks than others because they-

a. are exposed to more shocks (due to the climatic factor where they live) 
b. Are less able to cope with immediate aftermath (more sensitive) 
c. Are less able to bounce back in the longer term (less resilient).

Sensitivity and resilience are highly dependent on household financial health and ability to deal with change. These in turn depend on their diversification option and their access to or exclusion from key markets and opportunities (ODI, 2003).

In rural and urban areas the vulnerability differs substantially. The range of employment opportunities available in urban is much wider to the poor than in rural areas. John Farrington, Tamsin Ramasut and Julian Walker (2002), made an important insight on the difference of vulnerability in rural and urban area. They expressed that vulnerability tends to covariate in rural areas (i.e. many activities depend on the weather, and if unfavourable to one, it is generally unfavourable to most), such covariance rarely exists in urban areas. So in urban even if one area of livelihood is affected by vulnerability, others may remain open.

It can be understood that nature of the vulnerability determining factors are complex. It is suggested, that vulnerability can be understood through an assessment of tangible and non-tangible assets: labour, human capital, productive assets, household relations and social capital (Moser and Holland, 1997). Simple quantitative tools will not be sufficient to assess it but it has to be supplemented with the information collected by qualitative method. In this work both primary and secondary data sources are used to understand it. The trend/changes/shocks in the capital to some extent can be known from secondary data but for the sensitivity of the livelihood and the influence of external environment on individual group – youth, women, male working class is assessed by primary data. Thus with the support of both primary (qualitative and quantitative) and secondary data the vulnerability context in Assam is examined.

Trends and shocks are the two important elements chosen to see the influence of external environment on livelihood of rural and urban area. Trends are more predictable as it can give the rate of changes to the chosen livelihood capital. Shocks on the other
hand destroy assets mostly without prediction and can force people to abandon their assets. In this chapter only with the secondary data the vulnerability of rural and urban will be discussed. In the concluding chapter while discussing the livelihood outcome the vulnerability factor will be holistically taken into account with the support of survey findings. The secondary data will only give a macro perspective of vulnerability in rural and urban Assam. The survey data will help to supplement the information of secondary source.

2.0 Trends in livelihood capital

As discussed, the NSS reports are the basis of observing the trend of livelihood capital - financial, physical and human. The trend of the respective capital is analysed by the percentage change in the time period of the following elements

i. Financial capital- Assets and liabilities.
ii. Human capital- Health, nutrition and food availability.
iii. Physical capital- Drinking water, dwelling structure, sanitation and energy.

2.1 Financial capital

The financial asset balance of a household is the key indicator of its larger term security and sustainability. Greater the asset balance of a household greater the chance of upward mobility. Household with strong asset balance are more able to invest and adapt to new opportunities. A small or even negative financial asset balance is one indicator of the vulnerability of a household. The All India Debt and Investment Survey (AIDIS) report of 37th (1981), 48th (1992) and 59th round (2003) is referred in the study to observe the changes in the financial capital. (The data ‘as on 1991’ and ‘as on 2002’ is given in 48th and 59th report of NSS). In the discussion the vulnerability by area (rural and urban) and by occupation (cultivator and non cultivator in rural; self employment and others in urban) is referred. (The lists of table are given in Annexure B).

I. The change in financial asset is studied on the basis of
a) Absolute amount of assets.
b) Assets by occupation
c) Asset distribution by land holding and MPCE.
d) Asset composition
II. The change in financial liabilities are discussed on the basis of
a) The Incidence of Indebtedness.
b) Average amount of indebtedness.
c) Debt asset ratio.

2.1.1 Absolute amount of assets

In the time period (1981-1991 & 1991-2001) the absolute amount of assets increased in both rural and urban areas. The percentage increase of urban was higher than rural in two decades. Thus the rural are more vulnerable than urban as the asset holding is less in rural as compared to urban In last decade the percentage increase of asset was less than previous decade in both areas. It is to be noted that the fall in percentage increase of asset was steeper in urban than rural. It is also observed that from 1991 to 2001 the difference of the percentage value in urban narrowed down (Table 1.1). Liberalisation thus influenced both areas but urban livelihood as found more affected by the reform.

2.1.2 Average value of assets by occupation

A magnificent increase (2905%) in the asset value of non cultivators is noticed in the first decade (1981-1991) which signifies that in this time period the households with less than .002 land size, agricultural labour, artisans and other had better earning probably for the improved wage rate, higher demand and for good channelization by efficient marketing. After liberalisation the percentage increase of asset value declined for both cultivator and non cultivator. Though the rate of change of asset value for non cultivator did not remain as high, but comparably the increase of asset value remained higher than cultivator. In first decade the self employed had highest asset value in urban but in the post liberalisation period the value of others have increased significantly by 227% whereas self employed had the least increase of asset value (82%) in post liberalisation period. To be noted that though the percentage increase of cultivator was less but they remained richer in all through the period in rural Assam. To an exception in urban the self employed had a less asset value than others in 2001. Thus manufacturing and community etc. services increased in this time period. In last decade the asset of ‘others’ have increased in such higher proportion than ‘self employed’ that
in 2001 it became the highest asset holder among all the occupation types of rural and urban areas (Table 1.2).

2.1.3 Asset distribution by land holding and MPCE

In 1992 and 2002 the average value of asset by land size increased 143%. It is to be noted that the average value of asset declined in the decade for small farmers (.002 -1) from 1.3 lakh to 1.0 lakh (-20%). And in rest of the category an increase in the value is noted though the rate of increase remained same for landless and semi medium landholders (1.00-2.00). Least difference is observed among the medium sized landholder in the value of asset as the percentage difference in the decade was only 9 %.( Table 1.3.1). Thus we find that the asset of the small farmers declined and a very marginal increase occurred to medium sized farmers. The semi medium and landless farmers had an increase of asset value at same rate. The changes in the asset ownership by MPCE classes are studied within 1991 and 2002. In the time period the rural poor increased asset value by 170% whereas in urban it only increased by 9%. Thus urban poor is found to be more vulnerable. In rural area the distribution of asset is positively skewed. In rural area with the increase of MPCE the asset value increased in 1991 and 2002. In urban to an exception the richest class (MPCE basis) had less asset value as compared to previous class in 2001. Highest variation in asset ownership during 1991 in rural and urban is seen among the middle class group whereas in 2002 this variation is seen among the poor group in both rural and urban Assam (Table 1.3.2).

2.1.4 Asset composition

Land and building are the predominant items of asset both for rural and urban areas. In urban Assam almost 10% rise on the other asset is noted (Table 1.4). Both in rural and urban Assam the percentage share of building increased and land decreased. It is noted that rural people have diverted their asset from land to building in the time period. This makes the rural more vulnerable as land is the major resource of livelihood. In this condition diversified source of earning and poor development of non farm sector the rural poor can be pushed into poverty trap.

Asset items and liabilities classified by asset holding classes and household type
The relative importance of different items of assets over the two decades gives a very interesting picture. From above discussion it is understood that ‘other’ is a significant category of asset in Assam and thus distribution of other items (livestock & poultry, agricultural machinery and equipment, nonfarm business equipment, transport equipment, household durable assets, shares etc, deposits etc, dues receivable against loan) are taken in detail for knowing about the particular asset (among the other) item which is contributing most in the livelihood.

The changes in holding of the asset item in rural and urban are discussed initially and then the changes of items by occupation are explained. In two decade the class distribution of asset varied thus for comparability the classes are grouped into six broad categories- poorest, poor, middle, upper middle, rich and richest. In 1981 there were 8 classes in 1991 and 2001 there were ten classes. Thus there is a gap of two classes in 1981 within middle category. For the comparative purpose these categories are made.

In the first decade land and building increased more in rural than urban but in post liberalisation period the share of land increased at same rate in both area. Percentage increase of building in rural is much higher than urban in later decade. The asset item, livestock and agricultural machinery made a steady increase in the rural area whereas in urban it shows a declining trend. In the post liberalisation period the asset value of all transport equipment, nonfarm business, dues receivable and shares in companies and cooperatives and dues payable increased in urban at higher rate. Durable and deposits gained importance in both areas. The percentage increase of deposits for rural area is very high (256%) in last decade as compared to urban areas (184%). On the other hand the percentage share of durables in urban is marginally higher. In the post liberalisation period the total asset increased in urban at higher rate (226%) (Table1.4.1 and 1.4.2). Highest increase in both areas is found in loans but in rural the increase is noted among poor category whereas in urban the category is upper middle.

In last decade the increase of asset value with asset holding class is gradual in rural than urban. In 2001 it is found that the asset value is more or less concentrated among the middle and rich group in urban but in rural it is only among the rich group. In urban areas poorest group had no asset value on land in1981 and 1991. But in rural in all time

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period poorest group had value though it was very less as compared to the next class which made highest inter class difference of value in two decade.

Non cultivator made a very high increase in total assets than cultivator. Asset holding of non cultivator increased more for both the asset item - land and building. Both the occupation shows increasing trend of asset value on durables and the cultivators had higher increase in last decade. Cultivator had an increasing trend of asset value on livestock and poultry, transport and equipment and agricultural machinery but non cultivator had a declining trend in the stated item. In post liberalisation period non cultivator and cultivator increased their value on - nonfarm business, shares and dues receivable but the rate of non cultivator is higher for item nonfarm business and shares. Increasing trend of deposit was observed (113% and 161 %) for non cultivator but there is a marginal fall of the value in 1991 for cultivator.

In the matter of loan payable the value declined in first decade and then increased in later period for both occupations. Cultivator of poor group had no value in first decade but for non cultivator highest concentration is among the poorest. In later decade rich group had higher concentration of value for cultivator and all groups is equally important for non cultivator (Table 1.4.3 & 1.4.4). It is to be noted that the poorest cultivator in the first decade made a very high increase in deposits (2049%) and simultaneously had a negative change in land value. But in later decade the deposit became negative and land value increased at very high rate (1812%).

Increasing trend of asset value on durable is clear for self employed and others though the rate of self employed is higher as compared to others. In land and building the change in average value of asset for self employed and others are different. In first decade the self employed had very high rise (294% and 194%) as compared to later decade (56% and 81%) but for others the value had rise in later decade at higher percentage (211 and 316) as compared to earlier decade. Both categories had a declining trend on livestock and poultry. In post liberalisation period others made more asset of agricultural machinery and also invested in shares. Self employed are found more interested in nonfarm business and transport. The value of deposits shows increasing trend for both occupations but values on dues receivable declined for others in two decades (Table 1.4.5 & 1.4.6). Magnificent increase in deposit among the poorest
category of self employed is observed in later decade (80-300%) whereas among the other type highest increase is found in loan among the poor.

Thus it is found that liberalisation impact on asset item is more prominent in urban livelihood. Loan increased in post liberalisation period in both areas. Poorest group of urban had no asset value on land in first decade but in rural all through the period this group had asset value on land.

The figures explain that in 1991 there was less gap between the dues to be paid and to be received in both areas. Increase only in dues payable and marginal growth in receivable in post liberalisation period tended rural livelihood towards more vulnerability. In urban though the growth rate of dues payable is higher but a simultaneous increase also in receivable amount is noticed which to some extent limits the vulnerability.

**Household Indebtedness**

The percentage of the indebted households, representing incidence of indebtedness (IOI) and average amount of debt (AOD) per household shows the difference of burden in rural and urban areas and also for different occupation. It may be noted that in the comparison in this context that in surveys of 1981, ‘other liabilities’ were also included in the ‘debt’ of a household, over and above cash loans. This difference is ignored in the study for broadly understanding about the change of indebtedness in the state.
2.1.5 Incidence of Indebtedness and Average amount of Debt

The share of average amount of debt declined from 1981 to 1991 and then it increased in 2002 both in rural and urban Assam. From the estimates it is found that rural areas have comparatively higher incidence of indebtedness (Table 1.5). The data shows a gradual increasing trend of indebtedness of rural whereas in urban the percentage of indebtedness remained same. Thus in this context the vulnerability of rural is found to be higher.

*Incidence of Indebtedness and Average amount of Debt by occupation*

The percentage of indebtedness of households represents incidence of indebtedness. In Assam the indebtedness of non cultivator in last decade increased in higher percentage (3.89 to 8.9) as compared to cultivator (4.95 to 6.7) and became more indebted than cultivator (Table 1.5.1). In urban area we do not get to see a steady pattern of changes in indebtedness for self employed and others. From 1981 to 1991 in Assam the percentage of indebtedness for others remained same (3) but for self employed the percentage increased from 6 to 11. In last decade the percentage indebtedness of others increased (7) and of self employed decreased (5).

Taking the rural and urban together the indebtedness of non cultivator and other increased in last decade in much higher percentage in Assam. In last decade the change for cultivator is steady as it increased at marginal level but percentage of indebtedness for self employed declined significantly in urban Assam. The difference of average amount of debt between the cultivator and non cultivator only existed in 1981 (58%) and in the other period the difference is marginal.

In Assam the average amount of indebtedness (AOD) of self employed steadily declined as there was a marginal fall in first decade and in later decade the percentage decline was 71. On the other hand other than self employed people in urban had a heavy decline in indebtedness (1201%) in first decade but in post liberalisation period it jumped by 659%. Thus the AOD steadily declined in all period for self employed but for others we observe a fluctuation in average amount. The difference of the AOD among the self employed and other in 1981 was marginal in Assam which got widened up in the later period.
2.1.6. Debt asset ratio

The 'debt asset' ratio is defined as the average amount of debt outstanding on a given date for a group of households expressed as a percentage of the average value of assets owned by them on the given date. Thus the ratio reflects the burden of debt on any particular group of households on a given date. At any point of time, the outstanding debt of a household is potentially a charge upon its assets (NSS report of 59th round).

From 1981 to 2002 a constant rise in the debt asset ratio in rural Assam is observed at marginal rate but in urban from 1991 to 2001 the ratio declined. From 1981 to 1991 the ratio in rural increased by 0.17 percentage whereas in urban the rise is 1 percentage. Similarly from 1991 to 2002 in rural the increase is only 0.02 percentage but in urban the decline in percentage is 0.93 (Table 1.6).

Marginal fluctuation in rural Assam in debt asset ratio from 1981 to 2002 is evident but in urban a constant rise and fall can be seen. From 1981 to 1991 the debt burden in urban jumped very high but in 2002 it came down almost to the 1981 level. Increasing trend of debt asset ratio makes rural livelihood more vulnerable as comparative to urban area. Growth in total assets, dues receivable, and a constant growth in indebtedness in last decade makes urban livelihood less vulnerable.

Debt asset ratio by occupation

The debt asset ratio shows a marginal increasing trend both for cultivator and non-cultivator in first decade. In urban though the average of debt asset ratio is less as compared to rural but as we closely look at the proportion of debt asset ratio among the occupation we find that in last decade there is a rise in ratio for 'others' but for self employed there is a significant fall which made the overall ratio to decline whereas in rural both the occupation made a gradual decline in last decade (Table 1.6). From 1991 to 2002 the percentage of debt asset ratio for 'other' increased from 0.46 to 1.08 percentages. In the same time period the percentage of self employed significantly declined from 2.65 to 0.42 percentages. Thus we see an overall impact in declining the percentage of debt burden in proportion to asset in urban areas from 1.7 to 0.77.

Average value of assets and cash loan per household in last decade by occupation

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The estimates on difference in the percentage change in average of asset and loan in rural-urban gives the reason of high indebtedness in rural. In rural the asset increased by 143% in last decade and loan increased in 155%. In contrary in the same period the average loan in urban increased by 11% whereas the average assets increased by 147% (Table 1.7). This huge gap in rural makes the people more vulnerable.

The cultivators also had increase of asset and loan at same rate. But for non cultivator the increase of asset is higher than increase of loan. Artisan made the highest increase of asset and loan in the period among the non cultivators. The value of loan increased for ‘others’ and agricultural labour at same rate but to be noted that the agricultural labour had more increase of asset (2.7 times) as compared to ‘others’ (2.4 times).

Among the two broad groups, the self employed made less increase of asset as compared to others. The category of others had a steady increase of assets but among the self employed category like clerical etc and farmers had decline of asset. The average value of loan declined among categories of self employed but loan of categories among ‘others’ increased at a very high rate.

On the comparative study of asset and loan the people with other livelihood in urban is found to be more vulnerable. In rural cultivators were found more vulnerable for equal increase of asset and loan which explains their livelihood is in stagnant state.

To an outmost exception we find the average loan of rural area is very low. On discussion paper of Gaurav Datt on ‘Poverty in India and Indian states: An update’ he estimated the trend of poverty and distributional measures on the basis of NSS data. He found that annual growth of mean consumption of rural Assam (1957-58 to 1993-1994) is very low. It is second lowest and it has fallen at trend rate of 0.37% per year in rural Assam over 35 years. The mean consumption is measured in Rs. per person per day. It is estimated from regression of log poverty measures on the midpoint of the survey period for each NSS round (From 1951 to 1993-94). On the other hand based on other poverty index like head count index (H), the poverty gap index (PG), and the squared poverty gap index (SPG) Ginni index urban Assam is ranked among improved performer. These various indicators show an increasing trend of rural poverty. World Bank estimate also reflects similar findings, Assam occupies the second highest level in
mean consumption among the major states in urban areas on a comparable basis, but it is the second lowest in rural areas.

From secondary information we can thus probably infer that low average consumption in rural Assam keeps the average loan at low level. In addition to this poor data base can also be the probable reason. With the primary information this aspect can be understood clearly.

Thus on the basis of changes in assets and liabilities we have discussed the vulnerability by area and by occupation. By area the rural is found to be more vulnerable. In rural the cultivator and in urban the other is found as more vulnerable.

2.2 Human Capital:


2.2.1 Health

At the time when Assam is moving towards the attainment of the goal of ‘health for all’ it would be useful to understand the changes in health status during in the time period in rural and urban Assam. The gap between the health statuses of two areas also will help to know the area which needs to be prioritised in course of time.
Changes in the condition of health is discussed on the basis of
a) IMR (Infant Mortality Rate)
b) Morbidity and hospitalisation
c) Treatment from Government sources
d) Loss of household income per hospitalization

2.2.1.1 Infant Mortality Rate

The IMR indicator is considered by NFHS as more sensitive to changes that have a bearing on the quality of life. Sudden adversities or non availability of critical public health and life support services may be the factor behind the high rate of infant mortality given by NFHS.

Figure 3: Changes in IMR in rural and urban Assam

Source: NFHS1, NFHS2 and NFHS3.

Figure 3 shows a declining trend of IMR in rural Assam but in urban it is found declining till 1998-99 but in 2005-06 it increased by 24%. Though by absolute amount the IMR remained less in urban as compared to rural but we see the gap is narrowed down in the time period. The decline in IMR was significant for both rural and urban from 1992-93 to 1998-99 but it became marginal in the later period. Increasing tendency of IMR makes urban livelihood more vulnerable (Table 2.1).

2.2.1.2 Morbidity and hospitalisation

The morbidity is higher in urban than rural but the rate of increase in the time period was higher in rural. In rural Assam the ailment increased marginally as compared to urban areas. In both the period 60 plus age category showed highest ailment in rural and urban Assam (Table 2.2).
Taking the ailment by sex we find that in rural area there is more increase in male
ailment as compared to urban. The percentage difference of male ailment between the
two rounds is higher than female ailment. The urban women is found to be more ailing
in both the time period. With a focus on working population we find men are more
ailing than women in both areas. In addition to it we find the rural men and women
workers are more ailing than urban workers. Highest increase (140%) of morbidity is
noticed among the rural male working population and lowest (49%) is found among the
urban women working population.

Hospitalisation of persons by age groups

Medical treatment of an ailing person as an inpatient in any medical institution having
provision for treating the sick as inpatients is considered as hospitalised treatment. In both
areas we find an increasing trend of hospitalised persons. The difference is in the rate of
increase in hospitalisation. In rural areas the person hospitalized increased at a very high
rate (222%) whereas in urban the percentage increase is very marginal (63%). This
clearly signifies degrading health status of rural livelihood as compared to urban. It is to
be noted that on the basis of age group both in rural and urban the person hospitalised
increased. A common feature that is noted here is that in both areas no case of
hospitalised treatment is seen within the age category of 45-59 years. Hospitalised
person with age of more than 60 years made a significant increase of 370% in rural. In
urban no specific age category shows such high rate of changes (Table 2.2)

2.2.1.3 Treatment from Government sources

The Government sources for health care includes government hospitals, government
clinics, government dispensaries, Primary Health Centres (PHCs) and the Community
Health Centres (CHCs), and the state and central government assisted ESI hospitals and
dispensaries. When the treatment is done by not taking the sick as inpatient then the
treatment is called non hospitalised treatment. A significant declining trend of taking
non hospitalised treatment from Government sources is noticed in rural area from 1986-
87 to 2004. The percentage decline was high (28) from 1986-87 to 1995-96 which
became marginal in next period (Table2.3). In urban area also we find a declining trend
but the change was less in all trough the period. Initially rural people had higher
dependence than urban on Government sources for treatment but with time we see
almost equal percentage of people are dependent on it. It clearly indicates the poor performance of Government sources for health care. The 61st report has also made it clear that 73% of rural treats their spells of ailment in private sector. This is forcing rural poor either to lead an unhealthy life or forcing them to undertake private treatment with their subsistence earning. This also indicates vulnerability of rural livelihood.

2.2.1.4 Loss of household income for hospitalization

Ailment of a working or non working member of the household causes loss of household income. The loss in income during the period of treatment was derived on the basis of pay that he/she was drawing before the hospitalisation/ailment. For the self-employed persons, it was imputed based on the proportionate average income (lost) during those days.

From 52nd to 60th round in urban the average loss of household income increased by 153% whereas in rural it increased by 55% (Table 2.4). In 52nd round the gap of ‘loss’ between rural and urban in absolute amount was only of Rs.15 which increased in 60th round to Rs.689. The pay is the basis on which this loss is calculated and it is quite obvious that pay is significantly less in rural than urban. Thus in rural the loss in income is also less.

Increasing rate of change in ailment of working population of both sex and hospitalised treatment in rural Assam along with decreasing rate of change in non hospitalised treatment from Government sources makes rural livelihood more vulnerable.

2.2.2 Nutrition and adequacy of food

Healthy life is based on the intake of the wide range of nutrients which indicates the level of livelihood. Food security is a widely discussed issue for the sustainability of livelihood. S Maxwell and T. Frankeberger (1992) argued on their paper while making a technical review of household food security, that food security is but one subset of objectives of poor households. Food is only one of a whole range of factors which determined why the poor take decisions and spread risk, and how they finally balance competing interests in order to subsist in the short and long term. Naresh Singh and Jonathan Gilman (1999) referred the report of World Commission on Environment and Development which gave the idea of Sustainable Livelihood in decade ago as an
approach to maintain or enhance resource productivity, secure ownership of and access to assets, resources and income earning activities as well as ensure adequate stocks and flows of food and cash to meet basic needs. Food security was an important subject in sustainable approach from the very time it came into discussion. Kanta Murali on a report ‘Food Insecurity in Urban India’ examined that the problem of hunger in India is definitely not only for scarce food production. At the start of December 2002, India had a surplus of 53.56 million tonnes of food grains but still the problem of food insecurity persists. He referred Nobel Laureate Amartya Sen who pointed out that, unlike famines, chronic undernourishment receives little political attention. Writing in The Guardian he quotes (June 16, 2002), Sen "Alas, hunger in the non-acute form of endemic undernourishment often turns out to be not particularly politically explosive. Even democratic governments can survive with a good deal of regular under-nourishment. For example, while famines have been eliminated in democratic India (they disappeared immediately in 1947, with Independence and multi-party elections), there is a remarkable continuation of endemic under-nourishment in a non-acute form."

The changes on the nutritional intake in rural and urban areas are studied on the basis of NSS report ‘Nutritional Intake in India’ of 50th (1993-1994), 55th (1999-2000) and 61st (2004-2005) round. For studying the trend the estimates from various quinquennal survey of consumer expenditure conducted during 27th, 38th and 50th is also referred. NSS report of ‘Reported Adequacy of Food Intake in India’ of 50th (1993-1994) and 55th (1999-2000) round is reviewed to understand the changes in the level of adequacy of food.

*Changes in the intake of nutrients and adequacy of food are discussed on the basis of*

a) Per capita intake of calorie, protein and fat
b) Calorie intake in relation to ‘norm’
c) Intake of calorie, protein and fat by MPC
d) Calorie intake from different food group
e) Meals taken at home.
f) Food adequacy and availability status by household type.
2.2.2.1 Per capita intake of calorie, protein and fat

From the above three figures a point which comes out very strongly is that in urban from 38th to 61st round the pattern of intake of calorie, protein and fat was same. Other thing which can be inferred is that in 55th round the gap in the consumption of calorie, protein and fat between rural and urban was highest. In this period in urban the consumption of calorie, protein and fat went to the highest and in rural it dropped to the lowest except the consumption of fat. With a long term decline in calorie consumption in rural a convergence between the rural and urban pattern of calorie consumption in recent year is significant. From 27th to 61st round (except 38th round) the consumption of calorie in rural is less than urban. This is contrary to the requirement of rural population, as with greater intensity of work they need to consume more calories. In protein consumption also a substantial decline is noticed in rural area till 55th round (Table 3.1). Hanumantha Rao has argued that the increasing mechanisation of agricultural operations as well as the greater availability of mechanised transport has reduced the amount of manual labour and physical activity related to transport that is required in most of rural India. Natural change in dietary patterns, consequent upon the change in rural work patterns and lifestyles are the reasons given for the declining trend He suggests that this has meant a reduction in the biological requirement of energy.

A steady increasing trend is only noted in the consumption of fat in rural area. In urban also the consumption increased comparatively at higher rate from 38th to 55th round. On the food balance analyses carried out by the FAO it has been well documented that the intake of fat in the diet has been increasing in developing countries. FAO argues that when the dietary energy supply increases, the fat calorie ratio (i.e. the contribution of fat
to energy) increases mainly due to the increase in consumption of animal products (FAO, 1994).

In urban area the consumption of all the proximate principles declined during 2004-05. In rural on the other hand in this period consumption of the nutrients are tending towards the urban by which the gap has minimised. It has been argued that the increasing ‘urbanisation’ of rural areas has meant that urban lifestyles have penetrated into rural areas, and have influenced the narrowing down of rural-urban differences in food consumption. (C.P. Chandrasekhar and Jayati Ghosh, 2003). The calorie, protein and fat intake declined in urban Assam by 31kcal, 1gm and 2gm respectively in 2004-05. If such declining trend continues it can make the livelihood of urban unsustainable.

Kanta Murali (2003) in his report on urban food insecurity explained the extent of the problem of urban poverty by the declaration of the 1996 Recife International Meeting on Urban Poverty: "Urban poverty and its attendant human cost is perhaps the single greatest challenge of our time. The future of our towns and cities, which is where most of humanity will live in the next century, hinges on our tackling it successfully. The center piece of urban policy as we enter the 21st Century must therefore be the struggle against poverty, with goals such as the integration of the informal city, the recovery and democratic use of public space, and the reversal of the trend towards the concentration of wealth and opportunities, which so often ends in a spiral of violence."

The probable reason for such decline may be urban unemployment, urban poverty or underestimation of NSS data. Instances of underestimation are referred in Food Insecurity Atlas of Urban India by M.S. Swaminathan in the context of Kerala. 60th report of NSS on ‘Employment – Unemployment Situation in India’ gave number of unemployed (per 1000 persons by broad usual activity) in rural Assam as 18 persons and 24 persons in urban. Both are higher than All India average indicating greater dimension of unemployment in the state in comparison to the position of country as a whole. The Economic Survey Report of 2001-2002 indicates that the trend of urban poverty very steeply declined from 1973-74 to 1993-94 which almost remained stagnant in 1999-2000.
2.2.2.2 Calorie intake in relation to ‘norm’

Requirement of calorie per consumer unit in reality is not a fixed amount but a variable depending upon various factor like body weight, height, nature of work, health etc. From 26th round NSS has been using a level to the tune of 2700 calories per consumer unit per day as a standard and measure of actual intake may be compared with it. This level (2700 calories per consumer unit per day) is referred to and reported as the ‘norm’ level of calorie intake. Calorie intake level is reported as percentage of a ‘norm’ requirement of 2700kcal per consumer unit (PCU) per diem. Three PCU calorie intake levels as a percentage of normative requirements have been distinguished for presenting the estimated distribution (Less than 90, 90-110, and 110 above). C. P. Chandrasekhar and Jayati Ghosh (2003) quoted P. V. Sukhatme who had argued that such rigid norms were not valid, since the human body has adaptation mechanisms with different metabolic properties for those with lower body weights. In other words, those who already weigh less could also require less calories per day, even to do similar kinds of work.

Calorie consumption less than 90% would indicate nutritional deficiency. Table 3.2 provides estimation of how such nutrition deficiency has moved over time. In 55th round the percentage of nutritionally deficient households increased in both areas which again declined in 61st round. From 38th round to 55th round an increasing trend of nutritionally deficient household is noted in rural whereas in urban the percentage declined. From 38th to 55th round in urban an increasing trend is noted in the intake of 110 and above of the norm calorie. In rural the intake is less as compared to urban. The gap was higher in 55th round which declined in 61st round with the increase in percentage of rural and urban households to 18 and 28 respectively. Percentage of household in the middle category (90-110) made least variation in rural and urban areas. In 61st round the percentage of household in rural area is more than urban in this category. Thus from the above we find – In urban the intake of proximate principle has declined and also percentage of households consuming calorie above the norms has declined. Percentage of households taking within the limits (90-110) increased.

It signifies that in urban, expenditure on calorie containing food has declined. While discussing the distribution of asset item we found that in last decade urban households
have significantly increased their durable assets. Probably urban people of Assam now prefer more consumer items than food items. Impact of consumerism in the post liberalisation period can be a factor for such change in urban consumption basket.

2.2.2.3 Per capita per diem intake of calorie, protein and fat by MPCE class

To get a deeper insight on the matter the difference of per capita and per consumer calorie, protein and fat intake is studied from 1993-94 to 2005-06 on the basis of MPCE class. From this the relative importance of calorie, protein and fat within the rich, poor and middle class people segmented on the basis of MPCE can be understood.

In urban areas the consumption of calorie, fat and protein declined for richest class and highest change is noted among this class. In rest of the classes the protein and fat consumption increased but the increase of fat value is much higher than protein. Rich classes made higher consumption of fat as compared to middle and poor class. But in urban decline in the consumption of calorie is noted among the three classes of middle group.

The rural rich also found to have reduced calorie and protein (marginal) consumption. But fat consumption of the rich classes (Last five classes) made highest increase in this period. Calorie and protein consumption increased steadily among the poor and lower middle class (First six classes) of rural area. Some people from upper middle and rich category in rural also had a decline in consumption of calorie. As in urban the increase of fat consumption is much higher in rural (Table 3.3).

Above discussion very clearly portrays the increasing importance of fat in the diet of rural and urban area. The richest people from both areas have radically declined the consumption of calorie and protein. In urban the richer group had higher fat consumption. A clear transition in the diet pattern of richest category of both areas is clear. Fat consumption is more among the richer group in rural and urban Assam.

Prakash S Shetty(2002) has referred about the food balance data from the Food and Agriculture Organization (FAO) which shows that the change in energy intake in Asian countries has been small, but there have been large changes in consumption of animal products, sugars and fats. The net effect has been a marked shift in the diet with energy
from fat (both animal and vegetable) increasing each year. Data from India show that higher-income groups consumed a diet with 32% of the energy from fat while the lower-income groups consumed only 17% energy from fat. More recent dietary surveys in Delhi also confirm that the upper income groups in urban India currently consume higher levels of energy from fat as compared with the urban poor or rural populations. In Assam also we get somewhat similar picture. Here both in rural and urban upper per capita consumption expenditure group consume higher value of fat as compared to poor of both areas.

This inequality in the consumption can lead to health hazard for the affluent group in both the area. Prakash S Shetty(2002) has stated that chronic disease first affects the affluent classes within a population and then percolates through to other social classes. He examined that such feature is seen in industrialised societies some decades ago. But now it is getting manifest rapidly in developing countries. He predicted that it will not be long to find risk of chronic disease in the lower socio-economic groups of India, particularly since societies in rapid transition are likely to manifest quite marked polarisation in income during the developmental process.

2.2.2.4 Calorie intake from different food group

From the above discussion the change in the pattern of intake of nutrients is evident. Specifically, in calorie consumption we can see higher rate of change in urban area. In addition to it, discussion on the basis of MPCE we observe significant change in rural and urban area. Now it would be interesting to know the difference in food item consumed in time period. Based on the report of 50th and 61st round the comparison is made mainly to see the influence of liberalisation in food consumption (if any).

Reduction in cereal consumption and increase in non cereal consumption is common in both areas. Rural people take more calories from cereals and insignificant difference is noted in cereal consumption in time period between rural and urban. A marginal decline is seen in rural (77kcal to 73kcal) and urban (67kcal to 64kcal) in the cereal consumption. Reduction of cereal consumption does not affect the average attainment of energy when there is progressive increase in intake of protein and fats. Fats sources are mainly milk and milk product, animal product and fats and oils. Almost equal
percentage of (2 to 2.1) increase is noted in consumption of oil and fats in both areas. And in rest of the food item there is an increase in consumption less than 1% (Table 3.4). Both in rural and urban calorie intake declined from sugar, honey and miscellaneous items. In both area calorie consumption from roots tuber, meat, egg, fish, milk and milk product increased. Dietary fat intake, based on household surveys of NNMB, suggests that the visible fat in poor rural diets in India is largely vegetable-based with negligible animal fats. National Nutrition Monitoring Bureau (NNMB) assessed the fat intake from Indian dietary components. Cereals, pulses, tubers and vegetables have ‘invisible fat’. In addition to the visible fats consumed in the daily diet, which exists within the integral part of the grain or food this invisible fat is consumed. It has been computed that 10–15% of the daily energy in the diet can come from this invisible component and this level is adequate to meet the essential fatty acid.

In urban area people reduced consumption of pulses, nut, and oil seeds, vegetable and fruit and increased roots tuber, meat, egg, fish, milk and milk product. In rural areas calorie intake increased from roots tuber, pulses, nut, oilseeds, vegetable and fruit, meat, egg, fish, milk and milk product. Among these items highest increase is noted in consumption of roots tuber in both rural and urban areas. In rural area consumption only decreased from sugar and honey & Miscellaneous. We thus find rural people take caloric from higher number of items.

Major reason for the substitution of cereals by non cereals may be the increasing rate of price rise of cereals. This may have promoted a shift towards other kind of food in both regions. Even with the price rise rural people still spends good portion of income for cereal consumption. Based on the MPCE classes on an average the percentage of expenditure on food in rural Assam is 66 and percentage of expenditure on cereals is 24.8. It is quite obvious that in urban Assam people spends less in food (49.5) and cereal (13.6). Improvements in intakes of vegetables as well as animal products are beneficial for rural area. Reduction in the consumption of pulses is not beneficial for urban as pulses are very important source of vegetable protein in the habitual diet. The change in the pattern of consumption is less beneficial for urban and makes them more vulnerable.
2.2.2.5 Meals taken at home

It is found that in the decade from 1993-1994 to 2000-2005 the percentage increase of home cooked food in rural Assam is 9.94 whereas in urban the percentage change is negative (-8.56). It is found that in urban Assam prevalence of home cooked meals had gone down by almost 9% over last 11 years and in rural it increased by almost 10%. It clearly indicates vulnerability of urban livelihood (Table 3.5).

2.2.2.6 Food adequacy and availability status by household type

In addition to the different nutrients adequate quantity of food is necessary for the healthy and meaningful living. From the NSS report of 50th, 55th and 61st round we get a picture of the change in the adequacy of food intake in rural and urban. A positive trend is noted in sufficiency of food for all through the year in rural area (Table 3.6). In urban area we get a static and then declining a trend of households. It is also significant to note that marginal decline (4 to 3.6%) is seen among the rural households in seasonal inadequacy whereas in urban number of household increased in this category from .09 to 2.1 percentages. It is thus found, in time households getting adequate food increased in rural whereas in urban the percentage of such households decreased. In this condition vulnerability of urban is seen to be high.

To get a more detailed idea on the adequacy of food it is judged on the basis of household type. Comparison between 55th and 61st explains that in rural area the number of households getting food throughout the year increased for households of all occupations. In contrary reduced number of regular wage and salary earner and casual labour of urban got sufficient food (Table 3.6.1). The increase of household is marginal in rural but as compared to all types highest increase is obtained among the other household and other labour.

In urban areas highest decline of households getting enough food all through the year is noted among casual labour (from 92 to 80%) which is followed by regular wage and salary earner (100 to 98.8). Increasing percentage (6 to 18) of casual labour did not get food every day. In rest of the types also the percentage not getting food everyday increased. In rural areas household not getting food every day increased marginally for
agricultural labour from 7 to 9. The percentage of household not getting food everyday declined among self employed in agriculture and other household in rural areas. Among all the categories the casual labour of urban Assam is found to be most vulnerable in the context of adequacy of food. Though the casual labour have comparably higher wage but the uncertain nature of their work along with the high expenditure structure in urban make them relatively more vulnerable.

From the above discussion on nutrition and adequacy of food urban people are found less secured in food and thus they are more vulnerable. M.S Swaminathan in Food Insecurity Atlas of Urban India suggested that the problem of urban hunger is almost paradoxical. On the surface, life for all sections in urban India appears to be easier than in rural India. Wages and salaries are higher in urban areas; infrastructure is superior in cities and towns when compared with villages; schools and hospitals are more accessible; food availability is rarely a problem; and small signs of wealth such as radios and televisions are common, even in the slums. But these observations are deceptive. For example, even though urban wages and salaries are higher than rural wages and salaries, the urban poor fare poorly in terms of livelihood security. He explained that vulnerable groups in urban areas often depend on casual employment and daily wages. The uncertainty of these avenues of income has a significant effect on the food security of the urban poor.

2.3 Physical capital

Physical capital comprises the basic infrastructure and physical goods that supports livelihoods. Infrastructure consists of changes in physical environment that help people to meet their basic needs and to be more productive. Key components of infrastructure include- water supply and sanitation of adequate quantity and quality, energy that is clear and affordable, shelter of adequate quantity and durability. The different reports which are refereed here are - Report of 38th, 50th, 52nd, 54th, 60th and 63rd round and Sarvekshan of different years.
The changes in the physical capital is studied on the basis of

a) Sources of drinking water
b) Type of latrine
c) Dwelling unit
d) Sources of energy for cooking and lighting.

2.3.1 Sources of drinking water

Sustainable livelihood indispensably requires safe and easy source of drinking water. Brook and Davila (2000) in ‘The peri-urban interface: A tale of two cities’ discussed specifically about the plight of women specifically for improper source of water and fuel. He emphasised the impact of this certain task. He presented that, water and fuel collection in India is generally seen as women’s work. The strain on urban environments, particularly in peri-urban areas, can make these tasks time consuming, putting pressure on women’s working days and threatening their health through forcing them to walk long distances with heavy loads of wood or water.

The overall pattern in terms of the importance of different principal sources of drinking water is discussed in order to understand its change over last two decades for rural and urban Assam. For the purpose of comparability data from the source ‘spring’ is combined with ‘river, canal and lake’ and tanker is combined with other sources.

In rural area tube well and hand pump is the major source of drinking water in. In first decade tap as a source of drinking water increased by 390% which declined significantly to -3% (Table 4.1). In urban a marginal increase is noted in later decade. One fourth of rural households are found dependent in tap for drinking which gradually declined to 7% only. Poor maintenance, irregular supply, poor quality of water is problem which might have made people to shift into tubewell/handpump. In 1995-1996 tubewell and handpump became a significant source. It might be the result of the programme launched by the Govt of India ‘International Water Supply and sanitation decadal (1981-1990) programme’. One of the norms of the programme was one hand pump or stand post for every 250 persons. From 1995-1996 to 2002 it is noticed that percentage of households dependent on tubewell and handpump remained almost same (55). People dependent on handpump and tubewell remained static in last decade in
spite of the programmes which shows the programme could not prove successful in long run. Thus in the time period it is noticed percentage increase of household is only found in well and river/canal/lake sources and in rest there is decline in the percentage.

In urban area marginal change is found on the dependence of source of drinking water by households. Tap, tube well/hand pump and well remained an important source of water. Tank, pond, river, canal, spring other tanker is a source for very insignificant percentage on the decade. Increase on the dependence on tap and tubewell/handpump in 2002 is clear and well became less dependent source in 2002 as compared to other period. Thus almost a static picture in the source of water in urban is observed. Only 5% of households shifted from well to tubewell/handpump in urban Assam.

Thus in rural ‘tap’ as a source of drinking water is still a far cry. The rate of progress which was evident in first decade could not get a strong hold which got reflected clearly in later decade. Progress is not seen in the sources of drinking water. People are still mostly dependent on well and tubewell. This makes the livelihood of rural relatively more vulnerable.

2.3.2 Type of latrine

Sanitation coverage is usually defined in terms of the percentage of households having access to a sanitary latrine. In India, despite concerted attempts by the central Government, total sanitation coverage stands at 14 per cent of rural households. However, research shows that many of these latrines are not being used for their intended purpose (Sanitation and Hygiene Promotion Series). India made significant investments over the last 20 years in sanitation, but still India faces the most daunting challenge than any other country in South Asia. According to an estimate, India stands second among the worst places in the world for sanitation after China (D.S. Kapur, 2007). A vast majority of poor rural population are in worst state. It is estimated that using a pit latrine and disposing of children’s faeces in it can reduce diarrhoea incidence by 36 per cent or more (Esrey et al. 1990). The rapid urbanization is also putting a strain on already stressed urban sanitation systems in India. Slums are very rarely connected to city’s sanitation infrastructure and the sanitation situation as a whole in the country is deplorable.
In the study for the purpose of comparability the data of sewerage system is added with ‘others’ system available for sanitation. One fourth percentage of the households in villages in Assam is still without any latrine. Very insignificant change is noted in rural area in the use of latrines. In all through the time period ‘other’ type of latrine in rural is used by almost 43 to 53 percentages of households. Only 5% households used septic tank in the period. Relatively the importance of pour flush and service latrine increased from 1983(Table 4.2). Thus we find the sanitation in rural did not change positively and it remained still in deplorable state as it was.

In urban but we see a definite improvement in the condition of sanitation. There is a gradual decline in the percentage of household without latrine (7 to 2). There is a steady increase in the percentage of household using septic tank from 32 to 61. In 1995-1996 the service latrine became half of 1983 which slightly increased in 1998. No change is noted in the dependency of households (23) on other type of latrine from 1983 to 1995-1996 but it declined to 14% in 1998 (Table 4.2).

The comparative study indicates that a gradual improving trend is found more prominent in urban than rural as very insignificant percentage in urban stays with no latrine and use of septic tank is steadily increasing. Thus the status of sanitation very clearly indicates the vulnerability of rural livelihoods.

2.3.3 Dwelling unit

Condition of dwelling not only reflects the living status of the household and its members but also has a bearing on the health condition of the members of the households. Dwelling unit is studied on the basis of type and structure of dwelling. There are of three kinds of structures - katcha, semi pucca and pucca. The dwelling units have the following four types of dwellings – Independent house, flat, chawl/bustee and others.

In last decade we find semi pucca structure increased and it became the dominant type of dwelling in villages of Assam. Now almost 60%, of dwelling units in rural are pucca and semi pucca and 40% have katcha structure (Table 4.3). Though in urban higher percentage (93) of dwelling is pucca and semi pucca but the rate of change is noted
more in rural than urban. In the analysis of the distribution of asset items it was also noted that in rural area 'building' shows an increasing trend.

Independent house is a predominant type of dwelling in both rural and urban Assam. Thus most of the houses in both areas have separate structure with self contained arrangements. Such kind of houses increased (10%) in first decade in rural area but in later decade there is a marginal fall whereas in urban in later decade almost 10% increase is noted in such type of dwelling (Table 4.3.1). In rural with the fall of independent house a rise in chal/bustee (number of tenements mostly single roomed have common bathroom and toilet) is observed in later decade (0.01 to 4). In urban also almost increase of chal/bustee by 3% is noted in last decade. There is a gradual fall in percentage of 'flat' in urban (many housing arrangement in one building).

Thus from above it is found that in rural there is decline in independent house and increase in chal/bustee whereas in urban there is increase of independent house and also chawl/bustee. People living in chal/bustee are more vulnerable as they share same toilet and bathroom which enhances health hazard. Thus comparably higher percentage of katcha structure of household and increasing number of chal/bustee makes rural livelihood more vulnerable.

2.3.4 Uses of energy for cooking and lighting

Different sources are used as energy for cooking and lighting and with time the importance of these sources changed which are studied under different headings. Firewood and chips, Gobar gas, dung cake, coke, coal and LPG are the sources used for cooking on the other hand kerosene and electricity are used for lighting in rural and urban areas.

Cooking

A significant change in energy source for cooking within 2002 to 2004-05 is noted in urban area. In 2004-05, firewood and chips have taken the place of LPG in urban Assam. Increasing price rise of LPG forced the urban people to shift into firewood and chips. But it is environmentally vulnerable to the livelihood as without any replantation programme it will lead to reduced size of reserved forests. Easy accessibility to the
forest product also indicates loose administration and vigilance of the Government. Table 4.4 indicates household without arrangement of cooking is on rise from 4 to 7 percentages which add the vulnerability of urban household.

In rural such remarkable shift of energy sources is not observed. 1983 firewood and chips were the major sources (99%) of energy for cooking in rural. Gobar gas, dung cake, coke, coal and LPG was a very insignificant source. In 2002 and 2004-2005 almost no change is observed in rural areas and almost 92% was dependent on firewood and chips and 7% in LPG. Till 2002 dung cake and coke and coal was a source which became obsolete in 2004-2005. Use of dung cake, coal and coke is health hazardous especially for women and thus without its use the livelihood in rural can be said to have reduced vulnerability. Earlier gobar gas was used though at limited extent in both areas but lack of initiative by Government and for limited knowledge on its maintenance the source is completely absent from the state.

*Lighting*

A declining trend in the use of kerosene and an increasing trend in the use of electricity are evident in rural Assam. The percentage of households using electricity is very less as compared to urban Assam. The rate of change in rural is higher than urban. In urban the use of kerosene remained declined by 75% initially but later it increased by 5% but in rural the declining trend continued (Table 4.5). Though the percentage change in rural is higher but there is a huge gap between rural and urban in the use of electricity. Increasing price of kerosene and less percentage of households with electricity makes rural livelihood relatively more vulnerable.

On the basis of above discussion some selected variables of livelihood capitals are ranked to estimate the vulnerability.
Table 1: Ranking of the variables in the context of vulnerability in rural and urban Assam.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Rural</th>
<th>Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Financial capital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Average Value of Assets</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>ii) Incidence of indebtedness</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>iii) Debt Asset ratio</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>2. Human capital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) IMR</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>ii) Ailment of working population</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>iii) Treatment from Government source</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>iv) Hospitalised treatment</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>v) Calorie intake based on ‘norm’</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>vi) Calorie consumption from food group</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>vii) Food adequacy</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>3. Physical capital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Safe drinking water</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>ii) Sanitation</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>iii) Dwelling unit</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>iv) Energy source for cooking</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>v) Energy source for lighting</td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

Among 15 variables, the vulnerability in rural is found high for 11 of them and urban Assam is vulnerable to only 4 of them. It implies rural Assam is vulnerable to 73.33% of livelihood elements and thus is more vulnerable as compared urban.

2.0.0 Shocks

Shocks are such factors which can destroy assets directly and can also force people to abandon their assets. Here shock is mainly studied under two headings- manmade and natural. These components of vulnerability affect people of different area in different manner. Natural shocks may have a more adverse effect on rural area then on urban as the livelihood strategy of rural is more natural resource based. A livelihood can be classified as sustainable, when it is resilient to external shocks and stresses, when it is not dependent upon external support, when it is able to maintain the long-term productivity of natural resources and when it does not undermine the livelihood options of others (M. Kollmair et al. 2002). Flood is the most common natural shock in Assam.
affecting every aspect of livelihood. Violence against women is the man made shock which is gradually becoming more vulnerable factor in the context of the gender equity of society. From review of literature it is understood that gender equity is a significant issue in sustainable livelihood approach. Taken into account the importance of these two factors, focus is kept on these two during our following discussion on shocks for vulnerability study.

2.0.1 Flood

The main factors causing extensive floods are the adverse physiographic condition of the region, heavy rainfall, excessive sedimentation, frequent occurrence of earthquakes, hill/land sliding, reduction of forest area and encroachment of the area close to river. The Brahmaputra and Barak are the two main rivers which causes major problem of flood during the monsoon period in Assam which continue from the month of May till mid October. Apart from rainfall in Assam, occurrence of floods in Assam has direct correlation with rainfall in the catchments areas of neighbouring states of Arunachal Pradesh, Meghalaya, Mizoram, Nagaland and the adjacent country of Bhutan. Comparably the rural livelihoods get more affected by the successive waves of devastating floods. Crops, livestock, land and property are mainly the area which gets affected by flood. The National Flood Commission had estimated the area vulnerable to floods in Assam as 31.50 lakh hectares against 335.16 lakh hectares for whole India. Thus 9.4 percent of total flood prone area of India is present in Assam. The major flood that had occurred in the State was in 1954, 1962, 1966, 1972, 1977, 1984, 1988, 1998, 2002 and 2004 though the flood of less magnitude occurs almost every year.
Table 2: Damages caused by flood in Assam

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area affected</td>
<td>Hectare</td>
<td>239511</td>
<td>674748</td>
<td>932113</td>
<td>3142685.4</td>
<td>205947</td>
<td>48647</td>
</tr>
<tr>
<td>Population affected</td>
<td>No.</td>
<td>542634</td>
<td>7550581</td>
<td>5651954</td>
<td>13493392</td>
<td>704507</td>
<td>54823</td>
</tr>
<tr>
<td>Human lives lost</td>
<td>No.</td>
<td>4</td>
<td>65</td>
<td>52</td>
<td>497</td>
<td>27</td>
<td>7</td>
</tr>
<tr>
<td>Loss of cattle</td>
<td>No.</td>
<td>15</td>
<td>4294</td>
<td>4319</td>
<td>65967</td>
<td>NA</td>
<td>28</td>
</tr>
<tr>
<td>Villages affected</td>
<td>No.</td>
<td>1277</td>
<td>6807</td>
<td>7565</td>
<td>12235</td>
<td>985</td>
<td>847</td>
</tr>
<tr>
<td>Area eroded</td>
<td>Hectare</td>
<td>5348</td>
<td>429657</td>
<td>12589.60</td>
<td>7829.72</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Value of crop lost</td>
<td>Rs. in lakh</td>
<td>835.79</td>
<td>14559.95</td>
<td>14700</td>
<td>-</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Value of houses damaged</td>
<td>Rs. in lakh</td>
<td>259.49</td>
<td>4118.65</td>
<td>1869</td>
<td>-</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Total value of damages</td>
<td>Rs. in lakh</td>
<td>1095.28</td>
<td>18678.60</td>
<td>16569</td>
<td>-</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

* As received from Revenue Department upto 20-06-06
Source: Economic Survey of Assam, 2006-07

Table 2 shows the extensity of damages caused by flood in the state over last six years. Till 2004 a constant increasing trend of area affected by flood is noticed and highest loss of human lives, cattle and village occurred in 2004 itself. It was the most severe flood faced by the people of Assam. It affected Kamrup, Nalbari, Darrang, Sonitpur, Tinsukia, Dhemaji, Nagaon, Morigaon, Dhubri and Lakhimpur districts in the worst manner. The damages made flood have caused large inundation wide spread devastation to standing crops, homestead, life and property, disruption of road and rail communication, public utilities, water supply installation, irrigation structures and flood control structures etc. The world famous Kaziranga National Park with its animal populations has been affected badly. The National Park of Manas, Orang and Dibru-Saikhowa along with Wild Life Sanctuaries Burha Chapari, Pobitora, Laokhowa and Barnadi have been affected by the floods. The National Highways/State Highways have been overtopped at several places. Bridges have been collapsed at several places of the National Highway. In 2005 the damages made by flood declined in all the respect. To an outmost surprise during the year 2006 Assam faced drought like situation due to
shortage of rainfall. According to State Revenue sources 5 lakh farmers in 22 districts have been badly affected by drought like situation prevailing in Assam during the year. The actual rainfall was 384.7mm short from the expected rainfall which had hardly hit the farmers specifically on the area like Darrang, Dhubri, Kokrajhar and others who primarily cultivate paddy which is the major crop of Assam.

Thus it is found that with time the nature of shocks are not only changing but the features are also becoming different. To overcome these shocks with huge variation needs adaptive and coping strategies to make the livelihood sustainable. The detail studies on the strategies taken up by people during shocks are examined on the basis of primary data in fourth chapter. Erosion of the area did not show an increasing trend like flood. Highest soil erosion occurred during 2002 with an erosion of 429657 hectare and then it gradually declined and in 2004 only 7829 hectare was eroded. To some extent it can be accepted as a success of 681 Protection and Anti Erosion Works taken upto the end of 9th five year plan and 33 numbers of work are taken from 2001-02 to 2005-06 (Economic survey Assam, 2006-2007).

From the above discussion we understand that flood and erosion is making livelihood vulnerable since 1954. With minimum coping strategy the rural people sometime by losing the standing crop/livestock or sometime by loosing land in erosion are getting more and more trapped in poverty. To add the vulnerability farmers are facing drought like situation for the first time in 2006. Here by the secondary data broader perspective of vulnerability by flood is analysed. In later chapter we get a deeper insight of the problem from the field information.

2.2.2 Violence against women

As we have discussed gender equity is one of the significant aspects for sustainable livelihood. Violence against women is a technical term used collectively to refer the violent acts that are primarily or exclusively committed against women. This type of violence targets a specific group with the victim's gender as a primary motive. It has been observed that two-third of Indian women (married) have faced domestic violence in their lives. Seventy per cent of married Indian women between the age of fifteen and fifty have been physically assaulted, raped or coerced into sex by their spouses.
according to a report generated by United Nation Population Fund (www.domesticviolence.in) Women coming from rural background in India are more vulnerable to domestic violence compared to their counterparts in urban areas. This is because of their vulnerability due to lack of education, exposure and opportunity - and the nature of Indian society. The Indian state of Bihar tops the list of women, who are physically abused by their spouses. Married women from the state of Himachal Pradesh are found to be less likely to face violence at home, compared to other states in India. Thirty seven percent of Indian rural women have faced abuse and violence at home according to a new survey done by National Family Health body. They were found to be more vulnerable to violence due to lack of education. Rural women with no education are more easily violated by their spouses and in laws, but very few report this in public. However, it has been found that rural women with secondary or higher secondary education are also abused by their marital families more often, than those who are born and bred in urban areas and given less education. It has also been observed that illiterate women face more violence from their husbands compared to literate women. According to National Family Health Survey, 37.2 per cent Indian married women have experienced violence and abuse by their spouse. The survey states that 40.2 per cent Indian women from rural areas are facing more violence from their husbands compared to urban regions where the percentage is 30.4 except Bihar. In Bihar women from urban areas faced more violence then their sisters from rural areas. This was a strange phenomenon sited in the lawless state of Bihar. 62.2 per cent of its women were subjected to the trauma of domestic abuse in urban areas compared to 58.5 per cent of women from villages. The two big metros Delhi and Bombay were more humane in their treatment of women compared to other areas. 16.3 women emerged as battered in Delhi and 19.5 per cent in Mumbai (NFHS 3 Report).

Table 3: Violence against women

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of cases registered</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>1945</td>
</tr>
<tr>
<td>2005</td>
<td>2206</td>
</tr>
<tr>
<td>2006</td>
<td>2548</td>
</tr>
<tr>
<td>2007</td>
<td>3000</td>
</tr>
<tr>
<td>2008</td>
<td>3379</td>
</tr>
</tbody>
</table>

Source: CID Office, Ulubari. Guwahati
Under section 498(A) IPC violence against women includes all kind of cruelty and torture by husband. Sustainability of livelihood requires negative trend of the vulnerable factor. From the table 3, it is found that from 2004 to 2008 a gradual increasing trend of violence against women. For the non availability of data on domestic violence for rural and urban areas the study is concentrated only on data of violence against women. The rate of violence was gradually increasing till 2007 but in 2008 it made a sudden decline and the number of cases only increased by 379 from 2007. It is less as compared to 2006 and 2007. In 2007 it is found that 452 cases have added from 2006.

From the above discussion on shocks both the factors –flood, violence against women shows an increasing trend. The flood makes rural life more vulnerable. In the case of violence against women for the absence of data a comparative study of rural and urban could not be made. But review of literature indicated rural livelihood to be more vulnerable.

The observation on changes in time from secondary data on livelihood capitals and shocks reveal that rural Assam is gradually becoming found more vulnerable than urban. Analysis on vulnerability by primary data will help to give much broader and clear perspective of rural and urban Assam. Discussion was started on vulnerability, based on DFID model which gave a general view on vulnerability but later with primary information, individual livelihood in the context of vulnerability will be known holistically. Changes in livelihood capital gave us information about the livelihood status of rural and urban Assam in time period. Next question arises what is the present living condition of people and what are the difference in livelihood between Assam other states of India. In the next chapter to answer these questions the individual element of livelihoods capital is taken and a detail observation is made at specific point of time with reference to the national average.