# Inter-Regional Variations in the Inequality and Poverty in Bhutan

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## Abstract

*The findings of this sample study suggest existence of high income disparities between the urban and rural areas and across dzongkhags. Urban areas contribute about 69% of the total income, and Average Monthly Per Capita Income of urban areas is almost four and a half times higher than that of rural areas. The Gini coefficient value is higher in the urban areas (0.58) as compared to the rural areas (0.36) reflecting higher income inequality in the urban areas. Largely, income disparities can be explained in terms of the pattern of productive assets ownership. 81% of the productive assets are found to be concentrated in the urban areas. The skewed pattern of the disbursement of bank loans indicates that income inequality is also policy induced.*

*The finding suggests that the head count ratio is 66.23 if measured in terms of upper poverty line and 50.66% on the basis of the lower poverty line. Poverty is more a rural phenomenon as about 86% of the poor live in the rural areas. FGT index of normalized poverty gap is 22.61% and poverty gap in the rural areas is more than three times the poverty gap in urban areas. Dzongkhag-wise, the highest incidence of rural poverty is found in Pemagatshel and Samdrup Jongkhar and lowest incidence poverty is recorded in Chukha. The poverty decomposition study conveys that farmers, private sector employees and illiterates are among the most vulnerable groups to the incidence of poverty.*

*One important policy implication that emerges from this analysis is that poverty alleviation measures should be concentrated in those areas where the ratio of ΔNPG/ΔHCR is higher. An appropriate data base on poverty would make the poverty alleviation measures targeted and consequently more effective in terms of reducing the magnitude of absolute poverty.*

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**Background**

At the core of modern development economics is the issue of wide spread poverty and growing inequality. Simon Kuznets (1955) in his 'inverted U curve' hypothesis suggested that in the early stage of economic growth income distribution tends to worsen and in later stages it tends to improve. As modern economic growth is spreading across the globe, the problem is to not only to increase the size of the cake but also to ensure that it is equitably distributed. In the initial phase, economic growth tends to accentuate distributional disparity.

Economic growth is essential for improvement in the living standards of the population and to reduce absolute deprivation (poverty). It is through the process of trickle down that growth benefits percolate to the lowest strata of the society. The increased disparities in the distribution of income both across the population groups and between different regions, which are widely experienced in the developing countries reflect the failure of the trickle down process. Income inequality is an outcome of skewed distribution of factors of production both in terms of quantity and quality, strategy of economic growth, inappropriate social and political institutions, lack of or inadequate capabilities and functioning of the population, etc. A.K. Sen (1984) maintained that absolute deprivation in terms of personal capability relates to relative deprivation in terms of commodities, income and resources.

In the 1990s, Bhutan witnessed acceleration in the growth rate of GDP. Bhutan's economy has grown significantly since 1990. It registered an average annual real growth rate of GDP of 6.07% in the last decade (NAS 1980-2000). During the given period Bhutan's population also expanded at a rate of 3.4 % annually. The very high growth rate of the population caused GDP per capita to grow moderately close to 2.6% annually. Bhutan's per capita GNP is about US $640 (Source:

State of world's children 2003). If the inverted U curve hypothesis is to be believed it would mean that this growth is accompanied by growing inequality. According to UNICEF (2003) in Bhutan, the poorest 40% of the population receives as little as 13% share in household income, whereas the top 20% population receives as much as 49% of the household income. The UNICEF database highlights the high income disparities. But this database cannot be disaggregated further to review interregional differences.

*Graph No.1: Growth rate in 1990s*
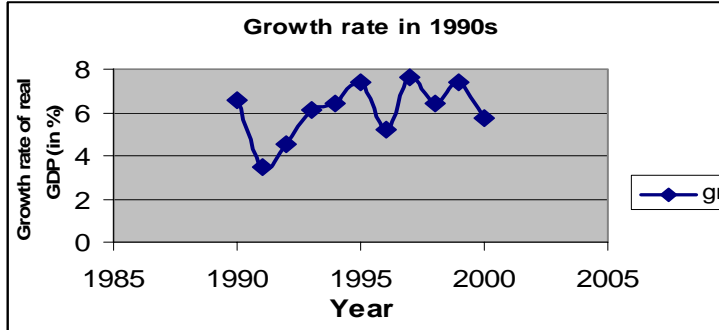


Source: NAS 1980-2000 (CSO, Planning Commission)

Various development literatures indicate that relative poverty degenerates into absolute poverty. If a country has large income disparity, there is a greater possibility of higher incidence of absolute deprivation. Regional disparity in terms of economic growth tends to accentuate income disparity and the laggards have greater incidence and extent of absolute poverty.

There are two important sources of information on the extent of absolute poverty in Bhutan, one is Household Income and Expenditure Survey (HIES) 2000 and another is UNDP estimates. According to RGOB (2001) average monthly per capita income of Bhutan is just Nu. 1200 (which means less than $1 a day, which is considered below the global poverty line) and approximately 27% of the population lives below the

poverty line. A poverty analysis report on Bhutan published by UNDP in 2004 suggests that about 31.7% of the population lives below the poverty line[1]. As far as absolute poverty is concerned, regional disparities are very high. Head count ratio shows high variation across the regions- 48% in the Eastern Bhutan, 29.5% in the Central Bhutan and 18.7% in the Western Bhutan. Even urban-rural differences in the absolute poverty are very high as 38.3% of the rural population lives below poverty line as compared to just 4.2% of the urban population.

The poverty analysis undertaken by UNDP has highlighted the fact that the problem of poverty and inequality in Bhutan is not only existent but is also significant. Still, the UNDP report cannot be disaggregated to the regional level, hence it cannot be used to draw inferences about the prevalence of the twin problems of poverty and inequality at the micro level. The central objective of this study is to identify the extent of inter-regional variation in the magnitude of absolute and relative poverty and to find out the possible explanatory variables affecting the disparity.

**Methodology**

This sample study is primarily based on primary data collection from 6 dzongkhags: Chukha, Haa, Bumthang, Lhuntshe, Pemagatshel and Samdrup Jongkhar. These 6 dzongkhags are so selected as to provide representation to Western, Central and Eastern Bhutan. From selected dzongkhags samples were collected from rural and urban areas. The rural urban samples were planned to be collected in a ratio of 3:1, as about 21% of Bhutan's population lives in urban areas. But finally the proportion of rural samples declined to 65% due to low response rate and greater rejection of the questionnaires due to incomplete or inconsistent information. A stratified convenient sampling process was used in this study as an appropriate sampling

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[1] Finding of this study were reported in *Kuensel* (the national newspaper of Bhutan), dated 25 October, 2004.

frame was not available. Stratification was done to incorporate appropriate size of rural and urban samples as well as to provide appropriate representation to different categories of occupation. The names of the dzongkhags and the rural and urban areas covered in this study are given in the table no.1.

*Table No. 1: Regions covered in the study*

| Dzongkhag | Urban | Rural |
|---|---|---|
| Bumthang | - | Chumey, UraTrabi, UraTroepa, UraTarsang and Ura Chari. |
| Chukha | Phuntsholing | Phuntsholing goenpa |
| Haa | Haa, Kastho | Yangthang, Hatey, Paytasima, Tokey, Ingo, Chimpa, Kibri, Takchu Goenpa, Bagana, Bjang Goenpa, Kana and Jyemkhana. |
| Lhuntshe | Lhuntshe | Gangzur, Khoma, Phasidung, Budur and Chokhor |
| Pemagatshel | Pemagatshel | Bartsheri, Moshizor, Dungjung, Shumar, Gopini, Bangdala, Kheri Goenpa, Lower and upper Gypsem. |
| Samdrup-Jongkhar | Samdrup Jongkhar | Devathang, Lamsarang, Wooling and Sekpasang |

The data were collected through personal interview and questionnaire. Sample units for this study are households. For the study size distribution of personal income, individuals in the working age group from each household were identified. Working age group is defined as the age group above 18 years subjected to the condition that either being employed for any period in last 365 days on 31 December 2004 or sought employment during the same period. For the poverty analysis we have used the concept of household income and for the personal income distribution we have used the concept of personal income.

In many occupations (such as agriculture and business) income is contributed by combined labour of the household members, in this case this income is treated as the income

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occurring to the head of the household.

For the poverty analysis we have used two criteria: 1) average monthly per capita income of Nu.750. This is based on the upper poverty line criterion of Nu.748.1 per capita per month as used by UNDP for its poverty analysis report. But in this study we will define it as the lower poverty line (LPL). 2) Average monthly per capita income (AMPCI) of Nu.1200, which was calculated by HIES (2000) as AMPCI of Bhutan, which is even lower than $1 per person per day criteria of defining international poverty line. This criterion would be used to define the upper poverty line (UPL). This is to measure the income shortfall from the average level of per capita income per month. This is an arbitrary criterion based on our assumption that a person should at least acquire a decent minimum standard of living comparable to the average living standard in order to avoid any form of deprivation and discrimination. This assumption is basically drawn from our individual assessment of Sen's (1993) writing on well-being, especially from one statement: "The functioning of well-being vary from such elementary ones …to the complex one such as being happy, achieving self-respect, taking part in the life of the community, appearing in public without shame."

Occupationally, individuals are divided in 9 categories. The list of the occupation and their respective codes is given in the table no. 2. In case if a person is engaged in more than one occupation, the occupation of that individual is further divided in two categories: primary and secondary. Primary occupation is defined as the occupation which earns greater income to a person and the occupation from which a person derives lower % of its total income is termed as secondary occupation.

*Table No. 2: Occupation categories*

| Occupation code | Occupation |
|---|---|
| 0 | Unemployed |
| 1 | Farming |
| 2 | Artisanship |
| 4 | Business (Trade and manufacturing) |

| 5 | Government employees |
|---|---|
| 6 | Semi govt. Employees |
| 7 | Private sector employee |
| 8 | Self employment in the informal activities |
| 9 | Hired employees in informal sector (daily wage earners) |
| 10 | Religious occupation (monks) |

We interviewed more than 500 individuals across the 6 dzongkhags but after applying GIGO method the effective sample size became 456.

The primary data collected are complemented with secondary data for further analysis. The type of the secondary data used and its sources are identified at the appropriate places in the report.

All the statistical tests done in this report are either done manually or carried out using Excel worksheet of Microsoft office XP.

**Concepts Used**

In any study related to income distribution it is necessary to select an income concept, which is theoretically acceptable and practically applicable. In this paper the concept of earned income is used. The earned income is pre tax income that excludes transfer payments. The concept of earned income is based on SNA guidelines that include both the actual and imputed income from all the sources, earned in cash or in kind. The reference period for the income estimates is the calendar year ending in December 2004. Average Monthly Per Capita Income (AMPCI) is calculated from the monthly household income by dividing it from number of the members in the household. Total personal income is defined as the sum of factor income earned from varied sources by an individual.

Assets are defined as productive real assets which include: land, other fixed capital and financial stocks. Value of the land is estimated at a blanket rate of Nu. 50,000 per acre for

wet land and Nu. 10,000 per acre for dry land. This is done to avoid regional variations in the real estate prices and to make the data comparable across the regions. Other fixed capital and financial stocks are valued at their current market price. For this information we have solely depended on the information rendered by the respondents.

**Findings of the study**

Findings of the study are divided into three parts. Part-1 is discussion about sample characteristics.Part-2 deals with the disparity in the size distribution of income. In part-3 the magnitude and extent of absolute poverty is discussed.

**Part 1: Sample Characteristics**

Regional distribution of the total 456 samples is given in the table no. 3. 298 samples (65.35% of the total) are from rural areas and 158 samples (34.65% of the total) are from urban areas. Dzongkhag-wise sample distribution is not based on the weight of their respective population share because dzongkhag-wise population figures are unavailable.

*Table No. 3: Region-wise distribution of samples*

| Dzongkhag | Rural | Urban | Total |
|---|---|---|---|
| Bumthang | 70 | 0 | 70 (15.35%) |
| Chukha | 4 | 93 | 97 (21.27%) |
| Haa | 65 | 24 | 89 (19.51) |
| Lhuntshe | 99 | 1 | 100 (21.92%) |
| Pemagatshel | 32 | 6 | 38 (8.33%) |
| Samdrup Jongkhar | 28 | 34 | 62 (13.60%) |
| Total | 298 (65.35%) | 158 (34.65%) | 456 |

311 samples (68.2%) are male and the remaining are female samples. In the rural areas 65.1% samples are male and 74.05% of the urban samples are male. Larger LFPR among the rural females as compared to their urban counterpart is a common characteristic in the predominantly agrarian societies. Occupational profile of the samples is given in the table no 4.

*Table No.4: Occupational distribution*

| Occupation Code | Bumthang | | Chukha | | Haa | | Lhuntshe | | Pemagatshel | | S/Jongkhar | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | U | R | U | R | U | R | U | R | U | R | U | R | U | GT |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 1 | 45 | 0 | 1 | 1 | 42 | 1 | 79 | 0 | 24 | 0 | 18 | 0 | 209 | 2 | 211 |
| 2 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 10 | 0 | 10 |
| 4 | 11 | 0 | 1 | 28 | 6 | 20 | 5 | 1 | 3 | 3 | 8 | 14 | 33 | 66 | 99 |
| 5 | 3 | 0 | 0 | 17 | 8 | 0 | 6 | 0 | 2 | 1 | 2 | 9 | 22 | 27 | 49 |
| 6 | 1 | 0 | 0 | 9 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 14 | 15 |
| 7 | 1 | 0 | 2 | 32 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 6 | 37 | 43 |
| 8 | 0 | 0 | 0 | 6 | 3 | 2 | 9 | 0 | 0 | 0 | 0 | 3 | 12 | 11 | 23 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 10 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 |
| Total | 70 | 0 | 4 | 93 | 65 | 24 | 99 | 1 | 32 | 6 | 28 | 34 | 298 | 158 | 456 |

R=Rural
U=Urban

Farming (code 1) is the largest source of occupation as 46.27% samples are farmers. Farming is virtually the predominant source of occupation in rural areas as it is the main source of livelihood for 70.13% of the rural samples. Business including trade is the second most important form of occupation as it provides occupation to 21.71% samples. In the urban areas business is the main source of occupation as it involved 41.77% of the urban samples and in rural areas it provides employment to 22.14% of the rural samples. There is a greater variation in the occupation profile between the dzongkhags. In the rural areas of Lhuntshe and Pemagatshel dzongkhags the percentage of farmers is 79.79 and 75 respectively. In the rural areas of Haa, Bumthang and Samdrup Jongkhar the share of farm based activities is about 64%. This indicates that rural areas in the eastern dzongkhags provide fewer opportunities for occupational diversification. Government sector provides employment to about 10.7% of the total samples.

Greater rural urban difference in the scope of government employment is reflected in the higher percentage of urban samples ie.17.08% are engaged in government sector jobs as compared to only 7.38% of the samples in the rural areas. The private sector plays a very marginal role in creating jobs in rural areas as it employs only 2% of rural samples; in urban centres the role of private sector in creating jobs is more significant as it provides employment to about 23% of the urban samples. The inter-regional disparity in the growth of private sector is seen from the different scope of private sector in creating jobs across the dzongkhags. In Chukha, the private sector employs about 35% of the samples, whereas its proportion ranges between 0 to 2.5% in other dzongkhags except Samdrup Jongkhar where it provides employment to 8% samples. Low job creating capacity of the private sector reflects highly inadequate development of the private sector everywhere except in the case of Chukha Dzongkhag. Other occupations are of lesser significance across the regions.

About 27.19% of the total samples also take up secondary occupation to supplement their income from primary activity. The percentage of the individuals undertaking secondary occupation is higher in rural areas (33.56%) as compared to that in urban areas (13.92%). The inter-dzongkhag variation is still greater. The most common form of secondary occupation in rural areas is in the informal sector as daily wage labour followed by handicraft. In the urban areas agriculture is the most common secondary occupation. This is because many urbanites have agricultural property in the rural areas.

Average household size for the samples is given in table no. 5. Average household size for the entire sample is 5.7 and the average size of sampled households in urban and rural areas is 5.13 and 6.01 respectively.

*Table No.5: Average household size*

| Dzongkhags | Rural | Urban | Total |
|---|---|---|---|
| Bumthang | 6.22 | - | 6.22 |
| Chukha | 4.75 | 4.72 | 4.72 |
| Haa | 6.58 | 7.5 | 6.84 |
| Lhuntshe | 5.41 | - | 5.4 |
| Pemagatshel | 5.53 | 4.83 | 5.42 |
| S/Jongkhar | 7 | 4.65 | 5.71 |
| Total | 6.01 | 5.13 | 5.7 |

Table no. 6 further highlights sharp rural-urban differences in the literacy rates. In the rural areas the literacy rate is 30.87%, that is about a third of the urban literacy rate. Bumthang, Haa, Lhuntshe and Pemagatshel are below average performers. Lhuntshe fares the poorest in the literacy front with a literacy rate of just 17.2%. But this finding cannot be used for generalization as the literacy level is calculated only for the persons who are in the working age group.

*Table No. 6:  Literacy rate (In %)*

| Dzongkhag | Rural | Urban | Total |
|---|---|---|---|
| Bumthang | 44 | - | 44 |
| Chukha | 50 | 89.25 | 87.63 |
| Haa | 33.85 | 66.67 | 42.7 |
| Lhuntshe | 18 | - | 17.2 |
| Pemagatshel | 31.2 | 0 | 42.1 |
| Samdrup Jongkhar | 46.43 | 88.2 | 69.35 |
| Total | 30.87 | 86.08 | 50 |

**Part 2: Disparity in the Distribution of Income**

*Regional Disparity of Income*

The most commonly used measure of relative poverty or inequality is the personal or size distribution of income.  It deals with persons or households and the total income they receive. This measure of inequality is most conveniently reflected through the Gini coefficient.  Functional distribution of income is another method of measuring income inequality. In this work we have analysed disparity in the size distribution of personal income and its regional variation through the Gini coefficient.

At the beginning it would be coherent to look at share of each sample dzongkhag and its rural urban components in the Total Personal Income.

Share of different regions in the total personal income is given in the table no. 7. Regional distribution of income reflects a high degree of disparity between different dzongkhags and between urban and the rural areas. Chukha accounts for almost half of the total personal income where as its share in total samples is just 21.27%. The share of Haa's Total Personal Income is 17.5% whereas its share in total samples is 19.51%. The remaining four dzongkhags collectively contribute about 32% of the total personal income where as they collectively account for about 60% of the total samples.

Another angle of looking at the regional disparity in the income shares is urban rural differences. Urban centres contributed to 69.38% of the total personal income and they account for almost 35% in the total sample size. On the other hand, the rural areas which command 65% share in total samples, contribute as little as about 31% of the Total Personal Income. The urban centres are relatively more affluent than their rural counterparts.

*Table No. 7: Share of different regions in total Personal Income (Figures in ngultrum thousands)*

| Dzongkhag | Rural | Urban | Total |
|---|---|---|---|
| Bumthang | 3770 | - | 3770 (7.77%) |
| Chukha | 483 | 23981 | 24464(50.45%) |
| Haa | 3683 | 4810 | 8493 (17.51) |
| Lhuntshe | 4621 | 274 | 4895 (10.09%) |
| Pemagatshel | 1140.5 | 1015 | 2155.5 (4.45) |
| Samdrup Jongkhar | 1152 | 3561 | 4713 (9.72%) |
| Total | 14849.5 (30.62%) | 33641 (69.38%) | 48490.5 |

*Graph No. 2: Dzongkhag-wise distribution of total personal income*



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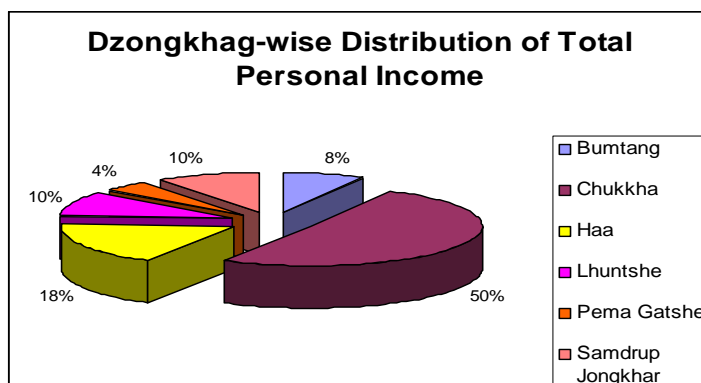
The evidence of the existence of high disparity in economic growth and consequent disparity in incomes across the regions can be viewed from the regional variations in the Average Monthly Per Capita Income (AMPCI) as shown in table no. 8. These differences are sharp across the dzongkhags and are sharper within the dzongkhags between the urban and rural areas. The income disparity across the dzongkhags is an outcome of differential economic growth rate and disparate economic opportunities offered by different locations.

Total combined AMPCI for all the samples is Nu.1809.56, which is almost 50% greater than UNDP estimates at about AMPCI (Nu. 1200) of Bhutan. AMPCI of Chukha is Nu.4353, which is more than double the combined AMPCI. Dzongkhags like Bumthang, Lhuntshe and Pemagatshel are not only below average but their AMPCI is about half of the total combined AMPCI. The performance of Samdrup Jongkhar and Haa are a little below the average. Chukha's AMPCI is almost 5 times greater than that of Bumthang and Lhuntshe. Both the urban and the rural samples from Pemagatshel and Samdrup Jongkhar have the least AMPCI amongst all urban and rural centres from all the dzongkhags.

The urban rural difference in AMPCI is also very large. The AMPCI of the urban samples is almost four and half times greater than the AMPCI of rural samples. F-test was conducted to verify whether difference in the Monthly Per Capita Income (MPCI) between rural urban areas is significant. F-test value is 3.708E-221; differences in the variability of the urban and rural MPCI is not at all significant.

*Table No. 8: AMPCI across dzongkhags (In Nu.)*

|  | **Rural** | **Urban** | **Combined** |
|---|---|---|---|
| Bumthang | 833.83 |  | 833.83 |
| Chukha | 1677.08 | 4353.02 | 4247.23 |
| Haa | 847.65 | 3270.03 | 1498.38 |

| Lhuntshe | 863.87 | | 863.87 |
|---|---|---|---|
| Pemagatshel | 573.82 | 2732.91 | 971.55 |
| Samdrup Jongkhar | 544.61 | 2228.21 | 1467.88 |
| Total | 805.40 | 3701.36 | 1809.56 |

The region-wise physical asset ownership pattern is highly skewed in the favour of urban areas, which account for almost 81% of the total physical assets (see table no. 9). This is probably the main reason for income disparity between urban and the rural areas. One interesting finding is that the correlation between assets value and income earned is dramatically different between urban and rural areas. In urban areas the r value is +0.9591 and in the rural areas the r value is +0.5405. This is because a greater part of rural income is contributed by human labour. Given the low literacy rates in rural areas and lower share of rural areas in the physical assets the productivity of labour in rural areas would definitely be lower. There is also an evidence of diminishing returns to scale in the use of physical assets in the urban areas. Almost 81% of the total assets are owned by urban samples, but the share of urban centres in total income is 69.38% (see table no.7). On the other hand, 19% of the total physical assets are owned by the rural samples, but the share of rural centres in the total income is 30.62%.

Dzongkhag-wise disparity in the physical ownership assets is equally sharp. Chukha accounts for 57.51% of the productive assets and Pemagatshel accounts for only 1.77% of the total physical assets. Chukha and Haa together own about 78% of the total physical assets and the collective share of the remaining four dzongkhags is just 22% while they together constitute about 60% share in the total sample size. The asset ownership disparity also explains the income wise disparity among the dzongkhags.

*Table No. 9: Physical asset ownership region-wise (Figures in Nu. 000)*

| Dzongkhag | Rural | Urban | Total |
|---|---|---|---|
| Bumthang | 14704 | | 14704 (3.90%) |
| Chukha | 2055 | 214757 | 216812 (57.51%) |
| Haa | 21337 | 57150 | 78487 (20.82%) |
| Lhuntshe | 25111 | 500 | 25611 (6.79%) |
| Pemagatshel | 4612 | 2075 | 6687 (1.77%) |
| Samdrup Jongkhar | 3885 | 30811 | 34696 (9.20%) |
| Total | 71704 (19.02%) | 305293 (80.98%) | 376997 (100%) |

*Graph No.3: Dzongkhag-wise distribution of productive assets*
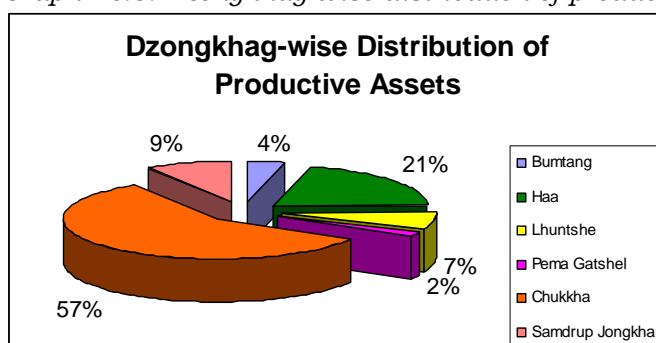


*Size distribution of personal income*

In this study we have used the Gini coefficient to measure the magnitude of disparity in the size distribution of personal income. The value of the Gini coefficient is calculated for all the samples taken together, for each dzongkhag and for their rural and urban constituents. This analysis will give us a deeper understanding of the magnitude of personal income distribution disparity as well as its rural/urban differences.

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*Overall situation*

As already pointed out earlier, total personal income is heavily biased in the favour of urban areas, it would be correct to infer that size distribution of personal income would be highly skewed. It is not wrong to believe so because generally inequality tends be greater in the urban centres, given the operation of the 'inverted U curve' hypothesis. In dualistic economies urban centres experience faster economic growth; consequently, not only urban/rural divide grows but also inequality within the urban centres widens.

*Table No. 10:  Overall size distribution of personal income*

| Sample Quintile | Absolute Income (in Nu.,000) | % Share |
|---|---|---|
| Q1 (0-20%) | 1569.9 | 3.24 |
| Q2 (20-40%) | 2826.5 | 5.83 |
| Q3 (40-60%) | 4307 | 8.88 |
| Q4 (60-80%) | 6816.2 | 14.06 |
| Q5 (80-100%) | 32970.9 | 67.99 |
| Total | 48490.5 | 100 |

The share of sample quintiles in the total personal income is as reflected in table no. 10.  The poorest 20% of the samples receive just 3.24% share in total personal income and the share of the richest 20% samples  receive as much as 68% of the total personal income. The ratio of the income share of the richest 20% to the poorest 20% is 20.98. Income disparity is wider in the urban areas and narrower in the rural areas. In the rural areas the ratio of the share in total income of the richest 20% to the share of poorest 20% is 7.09 as compared to 32.01 in the urban areas.

*Table No.11: Gini coefficient*

| Dzongkhag | Rural | Urban | Total |
|---|---|---|---|
| Bumthang | 0.3558 | | 0.3558 |
| Chukha | | 0.6245 | 0.6245 |
| Haa | 0.3653 | 0.4319 | 0.4795 |
| Lhuntshe | 0.3964 | | |
| Pemagatshel | 0.1965 | 0.4853 | 0.3827 |
| Samdrup Jongkhar | 0.2184 | 0.445 | 0.433 |
| Total | 0.3612 | 0.5801 | 0.551 |

Gini coefficient values are given in the table no. 11. Gini coefficient measures income inequality in a range of 0-1. If the Gini coefficient value is 0, it means complete equality, where all the persons receive similar income. On the contrary value 1 denotes complete inequality, where only one person receives all the income. As the income inequality widens, the value of the Gini coefficient rises.

The overall value of the Gini coefficient is 0.551. Its value for the urban and rural areas is 0.5801 and 0.3612 respectively. From this we can infer that income is heavily concentrated in the hand of a few persons; consequently, inequality is greater in the urban areas as compared to that in the rural areas. The highest value of the Gini coefficient (0.6245) is recorded in urban areas of Chukha Dzongkhag, which implies that size distribution of income is widest there. As we have already noted that AMPCI is highest in Chukha Dzongkhag, the highest degree of inequality there is consistent with the inverted U curve hypothesis. Urban centres from Haa Dzongkhag exhibit the most equitable income distribution from amongst all the urban centres. Urban areas in Haa have the lowest calculated value of Gini coefficient –(0.4319). Pemagatshel and Samdrup Jongkhar have recorded the lowest Gini coefficient value amongst the rural areas at 0.1965 and 0.2184 respectively. It is not sheer coincidence that the rural areas of these dzongkhags have also recorded

the lowest AMPCI. We can deduce that in the rural areas there is more equitable distribution of poverty.

The relationship between income measured as AMPCI and inequality measured through the Gini coefficient is shown in the table 12 and also in chart no. 4. This chart is drawn for the combined samples. In chart no. 4 the scattered diagram with a best fit shows that value of the Gini coefficient increases as AMPCI increases. The best fit deflects downwards later, implying that after a threshold level of AMPCI or PCI is reached the value of the Gini coefficient declines i.e. – inequality reduces. As Bhutan is in the initial phase of economic growth, it is natural that inequality in the personal distribution of income would grow and only in later phases the growth would be combined with the narrowing of disparities in the personal income distribution.

*Table No. 12: Relation between level of income and inequality*

|  | Rural | | Urban | | Combined | |
|---|---|---|---|---|---|---|
|  | AMPCI (in Nu.) | Gini | AMPCI (in Nu.) | Gini | AMPCI (in Nu.) | Gini |
| Bumthang | 833.83 | 0.3558 |  |  | 833.83 | 0.3558 |
| Chukha | 1677.08 |  | 4353.02 | 0.6245 | 4247.23 | 0.6245 |
| Haa | 847.65 | 0.3653 | 3270.03 | 0.4319 | 1498.38 | 0.4795 |
| Lhuntshe | 863.87 | 0.3964 |  |  | 863.87 | 0.3964 |
| Pemagatshel | 573.82 | 0.1965 | 2732.91 | 0.4853 | 971.55 | 0.3827 |
| Samdrup Jongkhar | 544.61 | 0.2184 | 2228.21 | 0.445 | 1467.88 | 0.433 |
| Total | 805.4 | 0.3612 | 3701.36 | 0.5801 | 1809.56 | 0.551 |

*Graph No. 4: Trends in income and inequality*

**Trends in Income and Inequality**
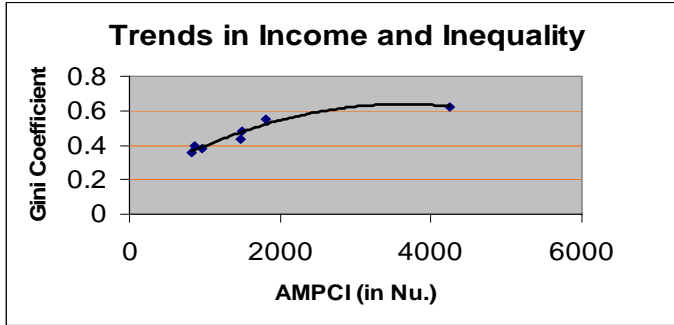


The correlation between combined AMPCI and the Gini coefficient for different dzongkhags is 0.9649, which is very high. This implies that rise in AMPCI would be combined with greater inequality in the distribution of personal income.

Personal income distribution can be explained in terms of size distribution of productive asset. Chart no. 5 shows that as the value of assets owned increases the income also increases. The scattered diagram reflects that the majority of the points are very near to the best fit; there seems to be high degree of association between the two variables. The table no. 13 reflects the correlation coefficient values between the value of the productive assets and the total income earned.

*Table No. 13: Correlation between the value of productive assets and income earned*

|                            | Rural  | Urban  | Combined |
|----------------------------|--------|--------|----------|
| Correlation coefficient (r) | 0.5405 | 0.9591 | 0.9554   |

The correlation coefficient between the value of productive assets and total income earned is 0.9554 for all the samples taken together and the value vary between the urban and the rural centres. Though there is positive correlation between the two in the urban and the rural areas, the coefficient value is much higher in the urban centres. Though higher correlation does not indicate causality, it is a definite pointer towards the fact that there is a greater association between

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the two.

*Graph No. 5: Relation between income and assets*

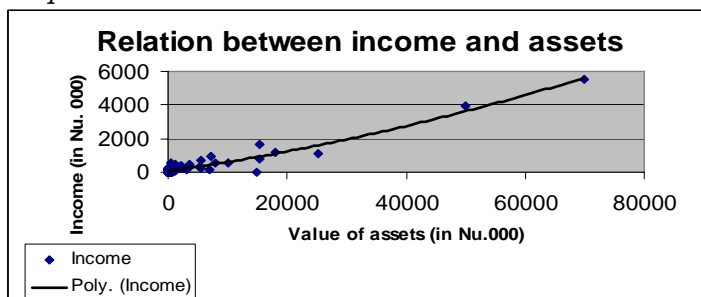**Relation between income and assets**



Table no. 14 conveys that there is a high degree of concentration of productive assets in a few hands. The first quintile owns as less as 0.005% of the total productive assets and the 5th quintile owns an overwhelming 86.78% share. In the urban areas, the concentration of physical assets is much sharper as the first 40% of the samples do not own any assets and the top 20% samples own as much as 93.84% of the assets. In the rural areas asset ownership is more equitable as the 1st quintile owns 2.2% of the total assets and the 5th quintile owns 49.83% of the assets.

*Table No.14: Size distribution of productive assets*

| Sample quintile | Rural % share | Urban % Share | Combined % Share |
|---|---|---|---|
| Q1 (0-20%) | 2.19 | 0 | 0.005 |
| Q2 (20-40%) | 9.46 | 0 | 1.739 |
| Q3 (40-60%) | 15.39 | 1.02 | 4.221 |
| Q4 (60-80%) | 23.14 | 5.14 | 7.246 |
| Q5 (80-100%) | 49.83 | 93.84 | 86.786 |
| Total | 100 | 100 | 100 |

Dzongkhag-wise size distribution of productive assets reflects

high variability between and within the dzongkhags. Highest disparity is witnessed in the urban areas of Chukha Dzongkhag where the share of the top 20% of the samples is 96.13%. It means that virtually all the productive assets are concentrated in a few hands. The remaining 80% of the samples own less than 4% of the productive assets. In the urban areas, the most equitable distribution of the productive assets is in the urban centres of Pemagatshel Dzongkhag where the share of top 20% of the samples is 44.58%. In all urban centres the share of the bottom 40% of the samples in the total productive assets is very low across the dzongkhags ranging from 0% in Chukha, Pemagatshel and Samdrup Jongkhar to 2.45% in Haa.

In the rural areas across the dzongkhags, size distribution of assets is less skewed than that in the urban areas, but inter-dzongkhag variation is still large. In the rural areas of Haa, the top 20% of the samples own as much as 50.41% of the total productive assets and the share of the bottom 40% is just 10.32%. In the rural areas of Bumthang and Lhuntshe dzongkhags the share of the top 20% samples in the total productive assets is about 46% and the share of the bottom 40% samples is 13.84% and 12.96% respectively in these two dzongkhags.

The rural areas of Pemagatshel have the most equitable distribution of productive assets, followed by Samdrup Jongkhar. In Pemagatshel and Samdrup Jongkhar the share of the top 20% of the samples is 36.64% and 37.32% respectively. The share of the bottom 40% of the samples in the total productive assets is 22.87% in Pemagatshel and 20.21% in Samdrup Jongkhar.

The high concentration of productive assets in few hands in Chukha perhaps explains why the Gini coefficient value is high there. This explanation is also probably true in the case of rural areas where productive asset distribution pattern is closely related to inequality in the personal income distribution. The higher the inequality in the asset

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distribution pattern the higher the value of the Gini coefficient and vice versa.

But there are certain interesting trends in the Gini coefficient values in the urban areas which cannot be explained in terms of asset distribution pattern. The value of the Gini coefficient in the urban areas of Haa is 0.4319 and in Pemagatshel it is 0.4853 that means inequality in the size distribution of personal income is higher in Pemagatshel. But the productive assets are more equitably distributed in Pemagatshel as the top 20% of urban samples own only 44.58% of the assets than they are in Haa, where the top 20% urban samples own 88.26% of the assets. Why does the more unequal distribution of productive assets result in more equitable distribution of income? This question is left to be answered by future researchers.

Another important determinant of the size distribution of personal income and regional income disparity is level of education that affects the quality of the labour force and makes it more productive. As far as urban rural differences in the level of income are concerned, educational attainment is considered to be a significant factor. We will consider whether this theoretical postulate is relevant. The average literacy rate in the urban samples is 76.18% and for the rural samples it is 30.87%. But despite higher literacy rates the disparity in the size distribution of income is higher in the urban centres. On the other hand, urban areas have both higher literacy rates and a higher level of AMPCI. This implies that higher educational attainment enables an individual to be more productive and earn higher income. The value of the correlation coefficient between education level and personal income is low but positive i.e.: 0.1577. Interestingly, the value of the correlation coefficient is lower in the urban areas (+0.1212) than in the rural areas (+0.2651). The value of productive physical assets owned has more significant association with income earning capability than the level of education in the urban areas. The higher value of the correlation coefficient between assets value and the size of

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personal income (+0.9561) implies that education attainment plays a less significant role. The implications are similar for the rural areas, where the correlation coefficient between value of physical productive assets and the size of personal income is (+0.5405), higher than between education level and size of personal income (+0.2651). Education can play a more important role in eliminating absolute poverty but not the same role in removing income inequality.

Finally it can be stated that the promotion of education along with more equal redistribution of productive physical assets can narrow the inequalities of personal income distribution and regional income distribution.

It would also be pertinent to explore whether regional disparity is policy induced. Inappropriate government policies, inequitable allocation of the public expenditure and other financial resources, and inadequate development of infrastructure are some important factors that create policy bias against certain regions.

In this study we have used bank loans as a proxy variable for government policy. We collected secondary data pertaining to loan advanced by Bank of Bhutan during the financial year 2004. Of the total loans advanced by the Bank of Bhutan in these six dzongkhags, Chukha received a predominant share of 94.48%. On the other hand Lhuntshe and Pemagatshel received even less than 0.24% and less than 0.41% respectively. This indicates that the rate of private investment must be significantly lower in the relatively backward dzongkhags, which results in regional disparity in the level of per capita income.

*Table No.15: Loan advanced by BOB in year 2004*

| Dzongkhag | Amount (In Nu. million) | % |
|-----------|------------------------|------|
| Bumthang | 31.39 | 2.30 |
| Chukha | 1291.33 | 94.48 |
| Haa | 21.25 | 1.55 |

| Lhuntshe | 3.30 | 0.24 |
|---|---|---|
| Pemagatshel | 5.65 | 0.41 |
| Samdrup Jongkhar | 13.85 | 1.01 |
| Total | 1366.77 | 100 |

*Source: Bank of Bhutan*

**Part 3:    Magnitude and the Extent of Absolute Poverty**

*Poverty Criterion*

Absolute poverty is defined as the inability of a person to command necessary resources to meet basic minimum needs. This would require setting up a minimum income criterion that enables a person to satisfy the basic minimum needs. As we have mentioned earlier in the methodology section, our definition of absolute poverty is based on poverty estimates of Bhutan by UNDP and the HIES (2000) estimates of AMPCI.

In this section we will explore the micro level magnitude of poverty and its regional variation. Magnitude of poverty is calculated through two indices:

1) Head Count Ratio (HCR): measures the fraction of total population which falls below the poverty line. We have calculated two HCR based on our definition of lower poverty line (LPL) and the upper poverty line (UPL), which were already defined earlier.

2) Normalized Poverty Gap (NPG): based on Foster Greer Thorbecke (1984) (FGT) index. Poverty gap is a better measure of the magnitude of absolute poverty than HCR. HCR only measures the fraction of total population that fall below the poverty line irrespective of the shortfall of the income from the poverty line, and all are given equal weight. Suppose the poverty line is Nu.1200, there are some persons who earn Nu.1100 and there might be others who earn only Nu. 400, but these differences are not taken into account in HCR. Poverty gap measures the amount of income transfer

necessary to bring the poor people above the poverty line i.e.: enable them to acquire the income that defines the poverty line.

A normalized poverty gap provides information regarding how far the households are from the poverty line. This measure captures the mean aggregate income shortfall relative to the poverty line across the whole population. It measures the depth and severity of the poverty. The measures of depth and severity of poverty are complementary to the incidence of poverty. This concept is also particularly important for the evaluation of the programmes and policies aimed at alleviating poverty.

In this study we will also explore the urban/rural and inter-dzongkhag differences in the magnitude of absolute poverty.

### Poverty Analysis Based on Upper Poverty Line

As mentioned earlier in this study our measure of upper poverty line (UPL) is AMPCI of Nu.1200. This criterion is used to estimate the extent and the magnitude of the shortfall of individual's monthly per capita income from the AMPCI. This criterion is also close to the criterion of international poverty line i.e.: $1 per person per day which comes out to be less than Nu.1500 per person per month. The findings about head count ratio are given in the table no. 16.

*Table No.16: Head Count Ratio based on UPL*

| Dzongkhag | No. of Poor | HCR (In %) |
|-----------|-------------|------------|
| Bumthang | 55 | 78.57 |
| Chukha | 34 | 35.05 |
| Haa | 62 | 69.66 |
| Lhutnshe | 79 | 79 |
| Pemagatshel | 32 | 84.21 |
| Samdrup Jongkhar | 40 | 64.52 |
| Total | 302 | 66.23 |

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302 samples out of a total of 456 samples have monthly per capita income less than Nu.1200 that means the overall head count ratio based on the UPL criterion is 66.23%. Pemagatshel Dzongkhag has the highest poverty ratio as its HCR base is 84.21%. Headcount ration in Bumthang and Lhuntshe dzongkhags is 79% and 78.57% respectively. 4 out of 6 dzongkhags have higher HCR than average HCR. In Haa Dzongkhag HCR based on UPL is 64.52%. Chukha Dzongkhag experienced the lowest poverty rate at 35.05%.
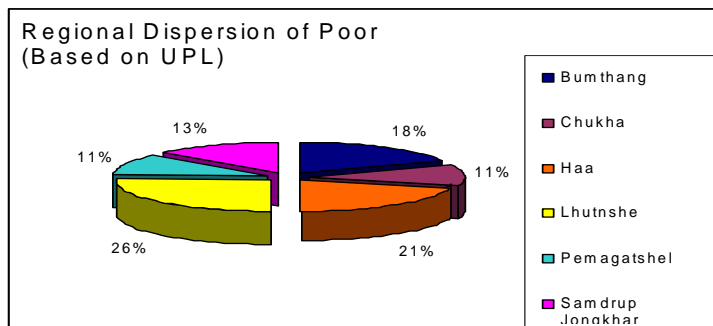
*Graph No.6: Overall Head Count Ratio*
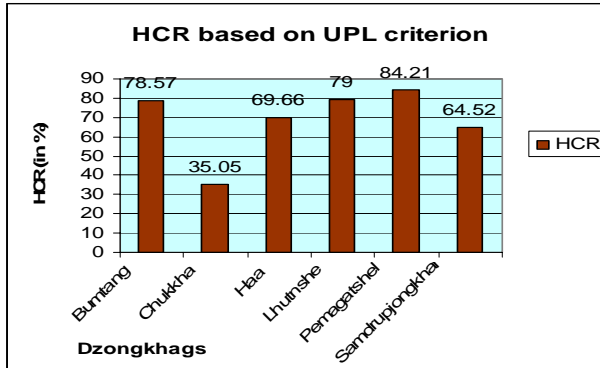


*Graph No. 7: Rural-urban dispersal of the poor*
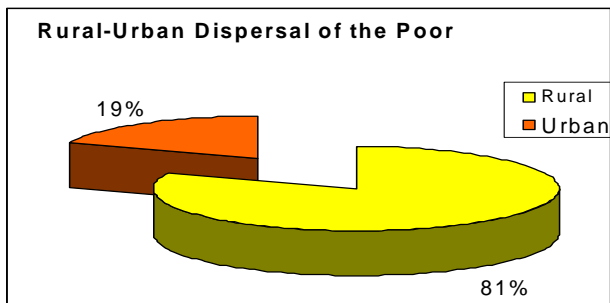


*Graph No. 8: Regional dispersion of the poor*

*Estimates of rural poverty based on UPL*

We have already analyzed that the AMPCI in the rural areas is lower than that in the urban areas. The AMPCI in rural areas is Nu.805.4 and in urban areas it is Nu.3701.36. From the magnitude of the difference between the urban and rural AMPCI it can be inferred that poverty must be much more concentrated in the rural areas. Analysis of the results in the table no.17 authenticates the inference.

*Table No.17: HCR in the rural areas (based on UPL)*

| Dzongkhag | No. of Poors | HCR (in %) |
|---|---|---|
| Bumthang | 55 | 78.57 |
| Chukha | 3 | 75 |
| Haa | 51 | 78.46 |
| Lhuntshe | 79 | 79.8 |
| Pemagatshel | 31 | 96.87 |
| Samdrup Jongkhar | 26 | 92.85 |
| Total | 245 | 82.21 |

In this study we found that the total number of rural poor is 245 that mean about 81.13% of total poor persons live in the rural areas. Obviously poverty is a rural phenomenon.

HCR for the rural samples is 82.21% which implies that 82.21% of the rural samples live below poverty line based on the upper poverty line criterion. The geographical distribution of rural poverty is also skewed.

Rural areas in Pemagatshel and Samdrup Jongkhar dzongkhags have very high concentrations of poverty. In the rural areas of Pemagatshel 96.87% of the samples live below a monthly income of Nu.1200 and 92.85% of the rural samples in Samdrup Jongkhar Dzongkhag are poor if defined on the basis of the upper poverty line. This is not surprising given that AMPCI in the rural areas of these dzongkhags is below Nu. 575. In the remaining dzongkhags, rural poverty ratios are below average and between 78-80% of the samples are poor.

*Estimates of urban poverty based on UPL*

Since AMPCI in the urban areas is almost four and half times higher than that in the rural areas, the urban poverty ratio must be lower than the rural poverty ratio. The magnitude of urban poverty is analyzed on the basis of information given in the table no. 18.

*Table No.18: HCR in urban areas (based on UPL)*

| Dzongkhag | No. of Poors | HCR (in %) |
|---|---|---|
| Bumthang | - | - |
| Chukha | 31 | 33.33 |
| Haa | 11 | 45.83 |
| Lhuntshe | - | - |
| Pemagatshel | 1 | 16.67 |
| Samdrup Jongkhar | 14 | 41.18 |
| Total | 57 | 36.07 |

The total number of urban poor is 57, which mean the urban poor accounts for only 18.87% of the total number of poor. In the urban areas poverty is less concentrated than in the rural areas. The HCR in urban areas is only 36.07% compared to 82.21% in the rural areas. In Pemagatshel Dzongkhag the urban poverty ratio is just 16.67%. Due to the small sample size there might be greater sample error and no inference

should be drawn from this. From the remaining samples, the urban areas of Chukha Dzongkhag have the lowest poverty rate, where a third of the samples fall below the poverty line. In the urban areas of Haa Dzongkhag the poverty ratio is the highest as 45.83% of the samples are poor based on the upper poverty line criterion. In Samdrup Jongkhar Dzongkhag the urban poverty ratio is 41.18%.

Based on the upper poverty line criterion it can be concluded that the average poverty rate is very high as almost 2/3 of the samples live below the poverty line. The rural/urban differences in the head count ratios are very sharp and poverty is more concentrated in the rural areas as 81.13% of the total poor live in the rural areas. Urban poverty is also significant as more than a third of the urban samples live below the poverty line.

*Graph No.9: HCR in the rural and urban areas*
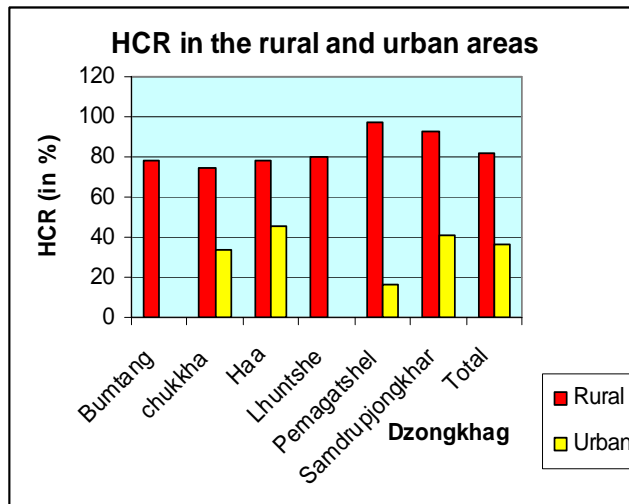


*Normalized Poverty Gap based on UPL*
On average, the shortfall of the poor's income (which is the

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measure of normalized poverty gap) from the upper poverty line is 36.42%. The poverty gap in rural areas is more than two and a half times larger than the poverty gap in the urban areas. The variance in the poverty gap between the rural and urban area is not significant as suggested by the F-test value of 0.398. Standard deviation for the combined value of the poverty gap for different dzongkhags is 11.05%. If we take ±3SD from the average poverty gap, income shortfall range for the 89% of the poor people is from 3.27% to 69.57%. In the rural areas where almost 80% of the poor reside, the average poverty gap is 47%, with a standard deviation of 4.58%. If we take ±3SD from the average poverty gap in the rural areas, the poverty gap range for the 89% of the rural poor would be 33.25% to 60.74%.

*Table No.19: Dzongkhag-wise normalized Poverty Gap based on UPL (in %)*

| Dzongkhag | Rural | Urban | Combined |
|---|---|---|---|
| Bumthang | 43.46 | | 43.46 |
| Chukha | 49.82 | 15.14 | 16.20 |
| Haa | 45.15 | 18.36 | 38.14 |
| Lhuntshe | 46.70 | | 46.70 |
| Pemagatshel | 50.65 | 5.42 | 43.52 |
| Samdrup Jongkhar | 56.17 | 21.27 | 37.03 |
| Total | 47.00 | 16.49 | 36.42 |

The largest poverty gap (56.17%) in the rural areas exists in Samdrup Jongkhar Dzongkhag and the lowest poverty gap in the rural areas exists in Bumthang Dzongkhag. Also, there is much less variation in the poverty gap in the rural areas of different dzongkhags as compared to that in the urban areas.

*Graph No. 10: Poverty gap*
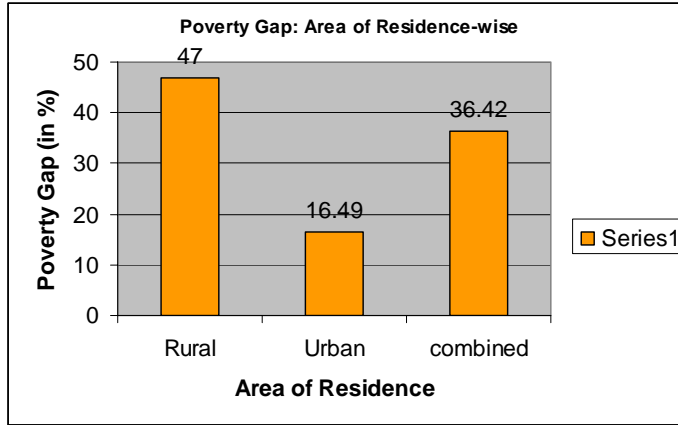
*Graph No. 11: Normalized poverty gap*
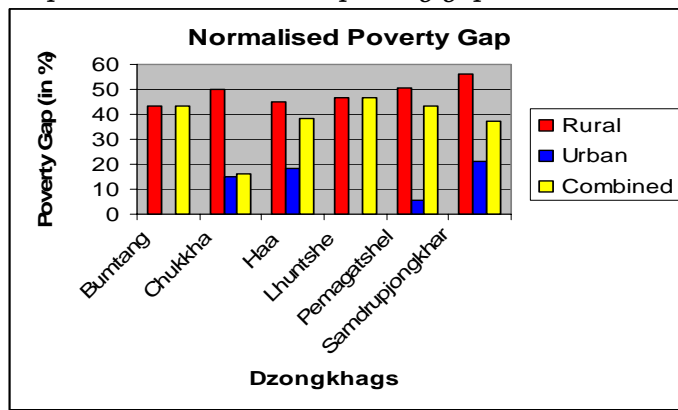


*Poverty Analysis Based on Lower Poverty Line*

Our lower poverty line estimates are based on the HIES 2000 criterion of an upper poverty line fixed at Nu.748.10 per capita per month. We have rounded off to Nu.750 per capita per month. Application of this criterion would give us more realistic estimates of the absolute poverty as compared to the upper poverty line based estimates. 231 samples were identified as poor because their monthly per capita income fell below Nu.750. As reflected in the Table no. 20, overall

head count ratio is 50.66% i.e. almost half of the total samples live below the poverty line. The highest incidence of poverty occurs in Lhuntshe Dzongkhag where the head count ratio is 66%. In Bumthang and Pemagatshel dzongkhags the head count ratio is more than 60%. The lowest incidence of poverty is found in Chukha Dzongkhag.

Our study shows that the incidence of poverty measured as head count ratio is higher than the HIES 2000 estimates of 31.75%.

*Table No. 20: Head Count Ratio based on LPL*

| Dzongkhag | No. of Poor | HCR (In %) |
|---|---|---|
| Bumthang | 43 | 61.42 |
| Chukha | 19 | 19.59 |
| Haa | 48 | 53.93 |
| Lhuntshe | 66 | 66 |
| Pemagatshel | 23 | 60.52 |
| Samdrup Jongkhar | 32 | 51.61 |
| Total | 231 | 50.66 |

*Graph No.12: HCR based on LPL criterion*
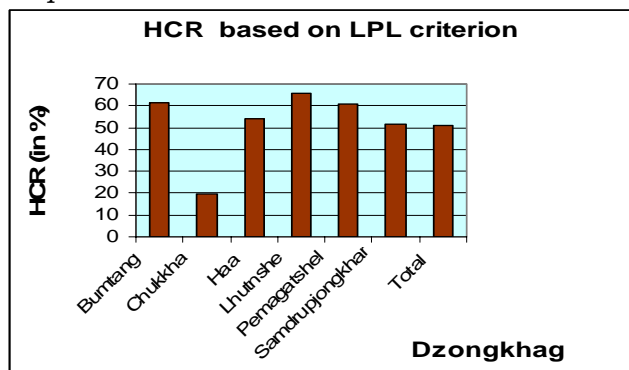


Dzongkhag-wise dispersal of poverty shows that the largest

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number of poor persons live in Lhuntshe, which constitutes about 28% of the total number of poor. 8% of the total poor live in Chukha Dzongkhag. Shifting of the poverty line criterion downwards (from UPL to LPL) has changed the pattern of regional dispersion of poverty, though very marginally. With this shift, the share of Lhuntshe Dzongkhag in total poor population increased from 26% to 28% and the share of Pemagatshel declined by 1 percentage point. The share of Samdrup Jongkhar and Bumthang in the total number of poor increased by 1 percentage point, while the share of Chukha Dzongkhag declined by 2 percentage points. The share of Haa in the total number of poor remained constant.

*Graph No.13: Regional dispersion of the poor based on LPL*
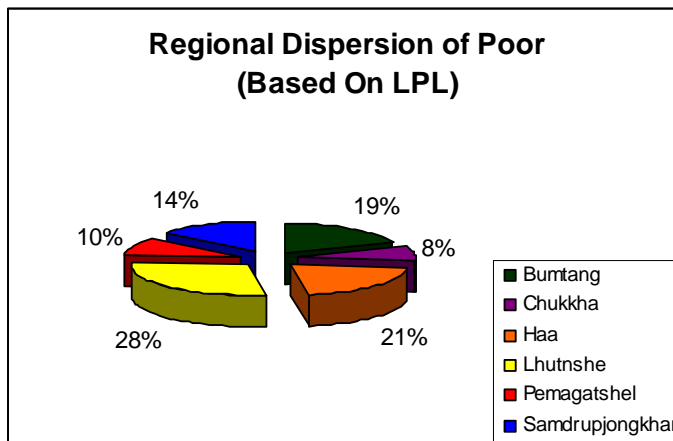


*Estimates of rural poverty based on LPL*

Shifting the poverty line from UPL to LPL criterion has resulted in an increase in the ratio of rural poor to total poor. Basing the poverty estimates on the upper poverty line we found that 81.13% of poor reside in the rural areas. On the basis of LPL estimate of poverty we found that percentage share of rural poor increased to 86% and correspondingly the share of urban poor declined. This is due to a higher poverty

gap in the rural areas as compared to that in the urban areas. In the poverty gap estimates based on UPL, normalized poverty gap in the rural and urban areas is 47% and 16.5% respectively. This further strengthens our earlier conclusion that poverty is more a rural phenomenon. Since almost 70% of the rural samples are farmers it can be inferred that poverty is more intensely spread among the farmers. As a majority of the farmers in the sample study practice traditional subsistence farming and in certain areas, like in the rural areas of Haa, farming is a seasonal occupation, it is quite probable that poverty is more concentrated in these groups.

*Graph No.14: Rural-urban dispersion of the poor based on LPL*
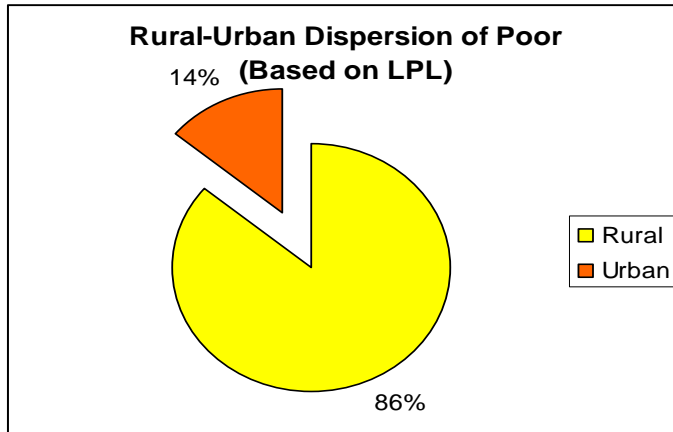


The head count ratio for the rural areas on the basis of LPL is 66.77%, 199 of the 298 rural samples have monthly per capita income less than Nu.750. Table No. 21 provides information about the head count ratios in rural areas of different dzongkhags. The highest head count ratio (82.14%) is found in the rural areas of Samdrup Jongkhar Dzongkhang followed by the rural areas of Pemagatshel Dzongkhag where the head count ratio is 71.87%. Chukha Dzongkhag has the lowest head count ratio amongst the rural areas.

*Table No. 21: HCR in the rural areas (based on LPL)*

| Dzongkhag | No. of Poor | HCR (in %) |
|---|---|---|
| Bumthang | 43 | 61.42 |
| Chukha | 2 | 50 |
| Haa | 42 | 64.61 |
| Lhuntshe | 66 | 66 |
| Pemagatshel | 23 | 71.87 |
| Samdrup Jongkhar | 23 | 82.14 |
| Total | 199 | 66.77 |

*Estimates of urban poverty based on lower poverty line criterion*

The head count ratio in the urban areas is much lower than the head count ratio in the rural areas. As already noted almost 2/3 of the rural samples are poor, where as only about 1/5 of the urban population lives below the poverty line. Table no. 22 provides dzongkhag-wise head count ratios in the urban areas. More than 50% of the urban poor are concentrated in the Chukha Dzongkhag. The very small sample size for the urban areas of Pemagatshel Dzongkhag is the main reason for the unusual result of the absence of poverty there. Despite the huge difference between rural and urban HCR, the variance in the two HCR is not significant as the F-test value of 0.7846 suggests.

*Table No. 22: HCR in the urban areas (based on LPL)*

| Dzongkhag | No. of Poor | HCR (in %) |
|---|---|---|
| Bumthang | - | - |
| Chukha | 17 | 18.28 |
| Haa | 6 | 25 |
| Lhuntshe | - | - |
| Pemagatshel | 0 | 0 |
| Samdrup Jongkhar | 9 | 26.47 |
| Total | 32 | 20.25 |

*Graph No.15: HCR in the rural and urban areas based on LPL*

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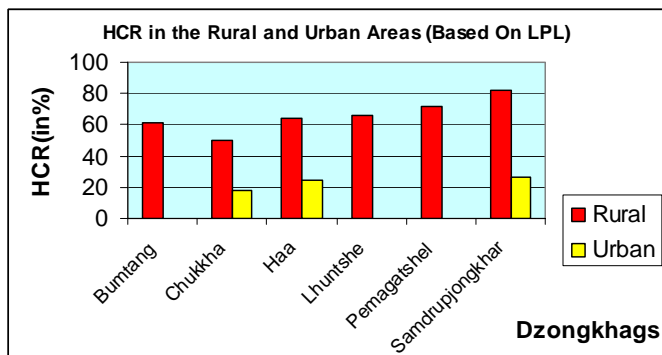
The highest incidence of urban poverty is witnessed in Samdrup Jongkhar Dzongkhag where the headcount ratio is 26.47%. The lowest incidence of urban poverty is in Chukha Dzongkhag where the head count ratio is 18.28%. The size of urban samples from Pemagatshel Dzongkhag is too small to be of any analytical importance.

*Normalized Poverty Gap Based on LPL*

The average shortfall of the poor's income (normalized poverty gap) from the lower poverty line (defined as per capita monthly income of Nu.750) is 22.23%. The poverty gap for all the rural areas is 29.89%, which is 3.35 times larger than the poverty gap of 8.9% in the urban areas. The variance in the poverty gap between the rural and urban area is not significant as suggested by the F-test value 0.687.

Highest poverty gap (30.6%) is found in Lhuntshe Dzongkhag and the lowest poverty gap is found in the Chukha Dzongkhag where the poverty gap is 9.44%. In the rural areas, largest poverty gap (36.02%) is in Samdrup Jongkhar Dzongkhag. In the rural areas of Chukha and Lhuntshe poverty gap is over 30%. In the remaining dzongkhags the range of poverty gap in the rural areas is 27-30%. The urban areas have a lower poverty gap. Poverty gaps in the urban areas range from a low of 8.77% in Chukha Dzongkhag to a high of 12.04% in Samdrup Jongkhar Dzongkhag. The

poverty gap for the rural and urban areas of the different dzongkhags are given in the table no.23.

*Table No. 23: Dzongkhag-wise Normalized Poverty Gap based on LPL criterion (in %)*

| Dzongkhag | Rural | Urban | Combined |
|---|---|---|---|
| Bumthang | 28.46 | - | 28.46 |
| Chukha | 34.72 | 8.77 | 9.44 |
| Haa | 27.50 | 7.47 | 22.43 |
| Lhuntshe | 30.60 | - | 30.60 |
| Pemagatshel | 29.36 | - | 25.20 |
| Samdrup Jongkhar | 36.02 | 12.04 | 22.88 |
| Total | 29.89 | 8.90 | 22.61 |

*Impact of the shift in the poverty line*

The shift from the upper poverty line to the lower poverty line has resulted in a fall in the head count ratio and the level of poverty gap. Table no. 24 reflects the impact of the lowering of the poverty line on the head count ratio and on the normalized poverty gap. The shift in the poverty line brought about a greater fall in HCR (- 44.11%) in Chukha Dzongkhag

*Graph No.16: Normalized Poverty Gap (LPL)*
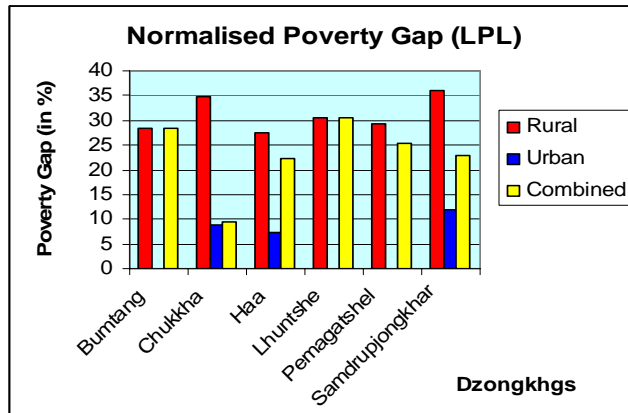


and the least fall in head count ratio (-16.46%) in Lhuntshe.

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Pemagatshel Dzongkhag experienced the largest decline in the poverty gap equivalent of 42.10% and the least was experienced in Lhuntshe Dzongkhag (-34.48%). For all the samples taken together, the decline in head count ratio and normalized poverty gap was 23.51% and 37.92% respectively. On average, for a percentage decline in HCR, the poverty gap fell by 1.61%. The higher the ratio the greater the intensity of poverty alleviation measures needed to reduce the poverty gap.

*Table No. 24: Effect of the shift in the poverty line from UPL to LPL.*

| Dzongkhags | % change in HCR | % change in NPG | $\Delta NPG/\Delta HCR$ |
|---|---|---|---|
| Bumthang | -21.83 | -34.51 | 1.58 |
| Chukha | -44.11 | -41.73 | 0.95 |
| Haa | -22.58 | -41.19 | 1.82 |
| Lhuntshe | -16.46 | -34.48 | 2.10 |
| Pemagatshel | -28.13 | -42.10 | 1.50 |
| Samdrup Jongkhar | -20.01 | -38.21 | 1.91 |
| Total | -23.51 | -37.92 | 1.61 |

One important policy implication that emerges from this analysis is that poverty alleviation measures should be concentrated in those areas where the ratio of $\Delta NPG/\Delta HCR$ is higher. Such a data base would make the poverty alleviation measures targeted and consequently more effective in terms of reducing the magnitude of absolute poverty.

### Poverty decomposition

Factors determining the income generating capacity of an individual will also determine absolute deprivation. For understanding the dynamics of absolute poverty these variables should be identified. Identification of these factors is termed as decomposition analysis. Recently Deaton and Dreze (2002) and Shorroks and Wan (2004) have used

decomposition analysis. Decomposition can be done in different ways such as by population sub-groups or by factor components. It can be used to analyze the impact of gender, occupation, area of residence etc. on the head count ratio. In this study we have used simple decomposition analysis and not the regression-based decomposition analysis.

As far as the area of residence-based decomposition of absolute poverty is concerned, we have already established that the incidence of poverty is much higher in rural areas. The urban areas have greater income disparity but lower incidence of absolute poverty.

*Occupation based decomposition of poverty*

In this part, occupation-wise decomposition of poverty analysis is done to see which category of the occupation has a larger incidence of poverty. This study will help us to identify the groups which are more vulnerable to the problem of absolute poverty. Results of these findings are shown in the table no. 25.

*Table No. 25 Occupation based decomposition of HCR (in %)*

| Occupation | LPL estimates | UPL estimates |
|---|---|---|
| Farmers | 78.5 | 98.3 |
| Businessmen | 25.3 | 37.4 |
| Govt. /Semi Govt. employees | 8.6 | 31 |
| Pvt. Employees (formal sector) | 41.9 | 65.1 |
| Informal activities | 39.1 | 56.5 |

The largest incidence of poverty is found amongst the farmers as 78.5% of the farmers are poor, based on lower poverty line estimates. Hired employees in the private sector experience second largest incidence of poverty. The government and semi-government sector employees are the least poor group. Shifting from the lower to the upper poverty line does not alter the results. This analysis highlights the fact that poverty is more concentrated in the rural areas and farmers are the

most vulnerable section. Private sector employees are the next most vulnerable group.

*Literacy status based decomposition of poverty*

Literacy status of a person has an important bearing on his or her functioning. Table no. 26 provides information about the head count ratio for literate and illiterate samples. The head count ratio for the illiterate group is almost two and a half times greater than that for the literate group if we base our estimates on the lower poverty line. On the basis of upper poverty line also, the illiterates have a much higher incidence of poverty. The illiterates are more vulnerable to absolute poverty.

*Table No. 26: Literacy based decomposition of HCR (in %)*

| Literacy status | LPL estimates | UPL estimates |
|-----------------|---------------|---------------|
| Illiterate | 72.93 | 88.21 |
| Literate | 28.19 | 44.05 |

*Gender based decomposition of poverty*

Evidence in this study suggests that poverty incidence is partly affected by the sex of the individual (see table no. 27). Females have a higher incidence of poverty than male members. The gender-based differences in poverty incidence can be explained in terms of lack of equal opportunities and capabilities. The shift from lower poverty line to upper poverty line does not alter the picture. A mark of caution is that these differences do not necessarily originate from gender biases and there could be other factors explaining the differences. This is left to the future researchers to identify the explanatory variables.

*Table No. 27: Gender based decomposition of HCR (in %)*

| Gender | LPL estimates | UPL estimates |
|--------|---------------|---------------|
| Male | 46.95 | 63.67 |
| Female | 58.62 | 71.72 |

*Area of residence based decomposition of poverty*

Urban rural differences in the incidence of poverty have already been mentioned in the part 3 of the section 2 of this paper. In rural areas the head count ratio is 82.2% and 66.77% respectively on the basis of UPL and LPL criterion. The urban areas have much a lower poverty incidence of 36% and 20.2% respectively on the basis of UPL and LPL criterion.

**Conclusions**

Findings of this sample study can also be used to make analysis about population characteristics.
Important conclusions of the study are:

1) AMPCI is calculated to be Nu.1809.5, which is almost 50% higher than the UNDP estimated AMPCI of Nu.1200. On average, Bhutanese live on more than a $1 a day which is known as international poverty line.

2) There is high degree of inequality in Bhutan both in terms of regional and personal distribution of income. Rural/urban disparities are very high. AMPCI in urban areas is almost four and half times more than the AMPCI in the rural areas. Urban areas contribute almost 69% of the total income and the rural areas having a share of 65% in total samples contribute just 31% of the total income.

3) Disparities are wider across the dzongkhags. Both the rural and urban AMPCI are highest in Chukha Dzongkhag. In the urban areas AMPCI ranges from Nu.4353 in Chukha Dzongkhag to Nu.2228 in Samdrup Jongkhar Dzongkhag. In the rural areas AMPCI ranges from Nu.1677 in Chukha Dzongkhag to Nu.544 in Samdrup Jongkhar Dzongkhag.

4) The value of the productive assets is found to have very high association with the level of AMPCI. Level of education tends to have less significant association with the AMPCI. Bank loan disbursements across the dzongkhags is heavily biased in the favour of Chukha Dzongkhag, which is probably one important reason of asset holding and consequent personal income disparities across the dzongkhags. Income

disparities thus can be explained in terms of disparities in the productive assets ownership pattern. Urban samples own almost 81% of the value total physical assets. Dzongkhag-wise disparities in the asset holdings are very high. Percentile share of different dzongkhags in the asset holding ranges from 57.6% in Chukha to 1.7% in Pemagatshel.

5) Size distribution of income within the dzongkhags and within the urban rural areas, measured in terms of the Gini coefficient, shows that income inequalities are higher in urban areas and lower in rural areas. The Gini coefficient value tends to rise across the dzongkhags as their AMPCI rises. There is a strong evidence of initial trade-off between income and equity.

6) Our estimates of absolute poverty on the basis of upper poverty line (Nu.1200 per capita per month) convey that 66.2% of the samples live below the poverty line. On the basis of lower poverty line (Nu.750 per capita per month) 50.67% of the samples are found to be poor. The rural areas have a higher incidence of poverty; a large number of poor live in the rural areas and also a majority of the poor are farmers. It can be stated that there is a high concentration of poverty in the agricultural sector which is characterized by traditional subsistence, and in certain regions it is a seasonal practice and consequently less productive. Hired employees of the private sector are the second most vulnerable section. Inter-dzongkhag variation in the head count ratio is very high as it varies from 19.6% in Chukha to 66% in Lhuntshe Dzongkhag (on the basis of the lower poverty line) and from 35% in Chukha to 79% in Lhuntshe Dzongkhag (based on upper poverty line).

7) Not only is the head count ratio high but the poverty gap is also high. The average shortfall of the income of the poor is 37.03% if calculated on the basis of the upper poverty line and it is 22.61% if calculated from the lower poverty line. The poverty gap calculated from either criterion suggests that there are high urban/rural differences in the depth of

poverty. In the rural areas, the poverty gap is almost three times larger than the poverty gap in urban areas. The poverty gap is the largest in Samdrup Jongkhar Dzongkhag both in the case of urban and rural areas. Chukha Dzongkhag has the least poverty gap.

8) Decomposition analysis suggests that incidence of absolute poverty is likely to be much greater amongst farmers, hired employees of the private sector and illiterates. These are the most vulnerable sections of the population and significant factors to the incidence of absolute poverty. Male citizens are less prone to poverty as compared to female citizens. The rural people are much more vulnerable to poverty than their urban counterparts.

9) Targeted measures of poverty alleviation will have a strong influence on the reduction in the poverty gap. In the areas where incidence of poverty is high, poverty alleviation measures would have better effect on reducing the poverty gap. Since poverty is primarily a rural phenomenon, a rural-centric development strategy would have a more positive effect on the magnitude of the poverty.

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