



**ROYAL GOVERNMENT OF BHUTAN  
NATIONAL STATISTICS BUREAU**



**SOCIO-ECONOMIC AND  
DEMOGRAPHIC INDICATORS 2005**

August 2008

ROYAL GOVERNMENT OF BHUTAN  
NATIONAL STATISTICS BUREAU



**SOCIO-ECONOMIC AND  
DEMOGRAPHIC INDICATORS 2005**

*August 2008*

<b>TABLE OF CONTENTS</b>	
<b>Foreword</b>	<b>5</b>
<b>Executive Summary</b>	<b>6</b>
<b>Chapter 1: Population characteristics</b>	<b>9</b>
1.1 Population	9
1.2 Urban-rural population distribution	10
1.3 Age composition	10
1.4 Ageing index	12
1.5 Sex ratio	12
1.6 Average household size	13
<b>Chapter 2: Fertility</b>	<b>14</b>
2.1 Crude birth rate (CBR)	14
2.2 General fertility rate (GFR)	15
2.3 General marital fertility rate (GMFR)	15
2.4 Total fertility rate (TFR)	15
2.5 Age-specific fertility rate (ASFR)	16
2.6 Teenage fertility	17
2.7 Fertility and socio-economic background	18
2.8 Birth attendance	18
<b>Chapter 3: Mortality</b>	<b>20</b>
3.1 Crude death rate (CDR)	20
3.2 Age-specific death rate (ASDR)	21
3.3 Natural population growth	22
3.4 Life expectancy at birth	22
3.5 Child mortality analysis	23
3.6 IMR, CMR and U5MR (Direct Method)	23
3.7 Indirect methods of mortality	25
3.8 Mortality by sex	26
3.9 Urban-rural mortality	26
3.10 IMR by socio-economic background	26
3.11 CMR by socio-economic background	27
3.12 U5MR by socio-economic background	28
3.13 IMR, CMR and U5MR by Dzongkhag	29
<b>Chapter 4: Migration</b>	<b>31</b>
4.1 Life time migration	31
4.2 Place of birth	33
4.3 Reasons of migration	34

<b>Chapter 5: Education</b>	<b>36</b>
5.1 Literacy	36
5.2 Educational status	39
5.3 Gross enrolment rate (GER)	41
5.4 Net enrolment rate (NER)	41
<b>Chapter 6: Labour and Employment</b>	<b>44</b>
6.1 Economic activity	44
6.2 Youth employment	46
6.3 Sector of employment	47
6.3 Dependency ratio	48
<b>Chapter 7: Housing and Household amenities</b>	<b>50</b>
7.1 House occupancy status	50
7.2 Housing conditions	51
7.3 Asset ownership	52
7.4 Access to road head	54
7.5 Water source	55
7.6 Toilet facilities	56
7.7 Source of lighting	57
7.8 Source of cooking	58
7.8 Access to basic amenities (MDG indicators)	59

## Foreword

The Population and Housing Census of Bhutan (PHCB) 2005 offers a wealth of information. Based on it, additional analyses were undertaken and three separate documents were published: National level population projections, Dzongkhag level population projections, and Dzongkhag Information.

To further substantiate its utility, an exercise was carried out to explore the existing data and derive useful indicators at the national and Dzongkhag levels. The National Statistics Bureau (NSB) is pleased to bring out the report, “Socio-economic and Demographic Indicators 2005” based on PHCB 2005, which contains information on Population characteristics, Fertility, Mortality, Migration, Education, Labour and Employment, and Housing and Household amenities. It also highlights some of the most important information from the PHCB 2005.

With increasing demand for disaggregated statistics at Dzongkhag level, it is necessary to provide important indicators which are useful for sectoral planning and monitoring and to assess the impact of implemented policies. The information presented at Dzongkhag level is adjusted with the recent boundary changes. Hence, any indicator or aggregated data derived at Dzongkhag level in the main PHCB 2005 publication will be different for those Dzongkhags affected by boundary changes.

While the report would serve as basis for planning, monitoring and specific target interventions; it is intended to serve as a guide to carrying out similar exercise for any other specific requirements and themes especially using the PHCB 2005 data.

The NSB would like to acknowledge the contribution of the UN System, particularly UNICEF, for its technical support and in bringing out this report. We would also like to thank all the concerned staff for their invaluable contribution.



(Kuenga Tshering)  
DIRECTOR

## Executive Summary

### Population characteristics

The total population of Bhutan counted in the PHCB 2005 was 634,982. The estimated figures prior to 2005 had big consequences for Bhutan's pre-2005 indicator values in use, as the denominator was taken higher. The PHCB 2005 revealed that urban population (30.9) was 2.2 times less than the rural areas (69.1%). The population among the Dzongkhags varied from 3,116 in Gasa to 92,928 in Thimphu. It is observed that Thimphu, Chukha and Samtse accounted for one-third of the total population.

The sex ratio at birth was 101 males per 100 females while the overall sex ratio was 111 males per 100 females with urban rate higher (117) than rural (108). The average household size stood at 4.6 persons per household.

One-third of the total population was under 15 years and it ranged from 30 percent in Paro and Thimphu to 38 percent in Dagana. Youth (15-24 years) comprised one-fourth (23%) of the total population and Thimphu had the highest youth population at 27 percent.

The ageing index for Bhutan was 14.2 implying that for every 100 children below 15 years, there were at least 14 elderly persons at the age of 65 years and above. Pemagatshel had the highest ageing index with 23.6 while Chhukha had the least with 8.6.

### Fertility

The crude birth rate (CBR) was 19.7 without any significant difference between urban and rural areas. The CBR was high in Trashiyangtse (24), Dagana (23.8) and Gasa (23.1) while Paro and Chhukha had the lowest at 16.8 births per 1,000 persons.

The general fertility rate (GFR) was 79.4 indicating that there had been 79 births per 1,000 women in childbearing age. Gasa and Trashiyangtse had the highest GFR of 102, while Paro had the lowest rate of 66.

The total fertility rate (TFR) stood at 2.5 in Bhutan implying that a woman would bear on an average 2.5 births in her entire reproductive life. The TFR was higher in rural areas (2.7) than in urban areas (2.1).

### Mortality

The crude death rate (CDR) ranged from 5.3 in Sarpang to 11.6 in Gasa. Age-specific death rates were usually high at the infancy which dropped to minimum at the age 10-14 and again rose gradually to a maximum with old age surpassing the infant death rate in the age range of 70 years and above. The under one year of age (infant) had the maximum deaths of 41 per 1,000 infants.

The natural growth rate of Bhutan was 1.3 percent and it varied from 1.0 percent (Chukha, Paro and Pemagatshel) to 1.6 percent (Dagana).

The overall life expectancy was 66.3 years with female life expectancy (66.9) slightly more than males (65.7 years). Bumthang recorded the highest life expectancy of 70.3 years while Gasa had the lowest with 57.8 years.

Samdrupjongkhar had the highest infant mortality rate of 69 deaths per 1,000 live births, followed by Trashigang of 65 deaths.

## **Migration**

Over the years, exactly half of the Dzongkhags gained in population while the other half of the Dzongkhags lost their population. Thimphu received the highest number of migrants (34,378) while Dagana received the least (67). Trashigang lost the maximum (19,046) while Haa lost the least (606).

Gasa had the largest proportion (81%) of their persons counted in their own Dzongkhag, while Tsirang had the least with 54 percent.

About one-third of the migrations were due to family move. One out of six people migrated because of employment. Education/training attracted at least one out of seven in-migrants. It is observed that one out of ten migrated because of marriage and also about one out of ten moved because of transfer of work place.

## **Education**

Bhutan's literacy rate was 59.5 percent with the urban population (76%) more literate than the rural population (52%). Only Gasa had more than half of its population illiterate. The youth literacy rate in Bhutan was higher (74%) than adult literacy rate (53%).

The rural population (56%) who never attended school/institute was double than the urban population (29%). Three out of seven females and three out of five men had attended or were currently attending school/institute.

The Primary gross enrolment rate (GER) was 90 percent with urban rate (98%) higher than rural areas (87%). The GER decreased with the level of education: Lower Secondary enrolment rate at 67 percent, Middle Secondary at 50 percent and Higher Secondary at 34 percent. The Primary net enrolment rate (NER) was 72 percent. The NER also decreased with the education level. The NER at the Lower Secondary was 22 percent, Middle Secondary was 16 percent and Higher Secondary 12 percent. The Primary NER was highest in Bumthang (83%). Thimphu had the highest NER at Lower Secondary level (33%). Haa had the highest NER at Middle Secondary (32%) and Punakha at Higher Secondary (27%).

## **Labour & Employment**

The population 15 years and above constitute the labour force. The labour force participation rate was 60.4 percent. The unemployment rate was 3.1 percent with urban areas (4.7 %) double than rural areas (2.4%). The female unemployment rate at 3.3 percent was more than their male counterparts at 2.9 percent.

Youth unemployment accounts to 55 percent with Thimphu recording the highest at 12.6 percent and Zhemgang with the highest rural unemployment rate at 7.6 percent.

Three out of seven persons were employed in the agriculture sector, one out of six in the industry sector, one out of five in the service sector; and one out of five worked in other enterprises.



The child dependency ratio of Bhutan was 53 percent. Dagana had the highest child dependency ratio of 68 percent. The total dependency ratio was 60.6 percent. It was higher in Dagana (74%), Lhuentse (73%), Zhemgang (72%) and Trashiyangtse (72%).

### **Housing & Household amenities**

Three out of five households in Bhutan lived in their own houses with proportion higher in rural areas (78%) than in urban areas (16%). At least one-fifth of the households rented the houses while another one-fifth had free accommodation with higher proportion in private houses. 46 percent of the households lived in houses built of concrete/brick/stone-walls. 56 percent of the households used CGI/metal for roofing.

Only about half (47%) of the rural households took less than half an hour to reach the nearest road head while almost all (99.4%) of urban households were within half an hour distance from the road head.

Six out of seven persons had access to improved water sources with the proportion higher in urban areas (95%) than in rural areas (81%). Nine out of ten persons belonged to households with access to improved sanitation. The proportion was higher in urban areas (95%) than in rural areas (89%). More than half (57%) of the households in Bhutan used electricity for lighting. 45 percent of the households used electricity for cooking while 55 percent used firewood.



## Chapter 1: Population characteristics

The Population and Housing Census of Bhutan (PHCB) 2005 established the country's population as per the UN methodology thus providing the most reliable base to calculate any indicator. The PHCB 2005 collected information about relationship to the head of household, sex, age, member and marital status, place of birth, etc. This chapter presents some information on the population disaggregated by sex and age groups; sex ratio, household size and age composition.

### 1.1 Population

The PHCB 2005 provides baseline data on population, housing, and socio-economic conditions. Prior to the conduct of PHCB 2005, users were confounded by different and varying population figures on Bhutan. In the absence of a comprehensive nationwide census earlier, population figures were based on the 1996 estimated size of 600,000 with growth rate of 2.5 percent as derived from the National Health Survey 2000, which would have estimated the 2005 population to about 771,000 persons. On the other hand, UN estimates were much higher, as for instance, the UNICEF (State of the World's Children Report) estimated the 2005 population of Bhutan at 2.16 million. Hence, the population denominator for calculation for most of the development indicators was not reliable.

The PHCB 2005, conducted on a de facto method of enumeration established the total population size of Bhutan at 634,982 persons of which 52.5 percent (333,595) were males and 47.5 percent (301,387) females. The slight excess of males over females could be mainly due to the expatriate working population in the country who were mostly men.

Spatial distribution of the population differed significantly across Dzongkhags. The least populated Dzongkhag was Gasa with only 3,116 persons while the largest population of 92,928 persons was in Thimphu. One-third of the total country's population was found in the three most populous Dzongkhags of Thimphu, Chukha and Samtse as shown in Table 1.1.

**Table 1.1: Distribution of population by sex and area, Dzongkhag, 2005**

Dzongkhag	Urban			Rural			Bhutan		
	Male	Female	Both Sex	Male	Female	Both Sex	Male	Female	Both Sex
Bumthang	2,353	1,850	4,203	6,398	5,515	11,913	8,751	7,365	16,116
Chhukha	17,577	15,349	32,926	24,721	16,740	41,461	42,298	32,089	74,387
Dagana	1,538	1,198	2,736	9,962	9,972	19,934	11,500	11,170	22,670
Gasa	220	182	402	1,415	1,299	2,714	1,635	1,481	3,116
Haa	1,332	1,163	2,495	4,952	4,201	9,153	6,284	5,364	11,648
Lhuentse	838	638	1,476	6,889	7,030	13,919	7,727	7,668	15,395
Monggar	4,018	3,135	7,153	14,676	15,240	29,916	18,694	18,375	37,069
Paro	1,673	1,259	2,932	17,621	15,880	33,501	19,294	17,139	36,433
Pemagatshel	1,925	1,380	3,305	9,186	9,796	18,982	11,111	11,176	22,287
Punakha	1,199	1,093	2,292	10,780	10,390	21,170	11,979	11,483	23,462
Samdrup jongkhar	5,391	4,555	9,946	12,053	11,890	23,943	17,444	16,445	33,889
Samtse	5,115	5,024	10,139	26,191	23,770	49,961	31,306	28,794	60,100
Sarpang	6,247	5,571	11,818	13,085	12,198	25,283	19,332	17,769	37,101
Thimphu	42,465	36,720	79,185	8,041	5,703	13,744	50,506	42,423	92,929
Trashigang	3,772	3,044	6,816	21,140	20,827	41,967	24,912	23,871	48,783
Trashiyangtse	1,588	1,430	3,018	7,273	7,449	14,722	8,861	8,879	17,740
Trongsa	1,455	1,240	2,695	5,414	5,310	10,724	6,869	6,550	13,419

Tsirang	822	844	1,666	8,695	8,306	17,001	9,517	9,150	18,667
Wangdue	4,219	3,303	7,522	11,864	11,749	23,613	16,083	15,052	31,135
Zhemgang	1,812	1,574	3,386	7,680	7,570	15,250	9,492	9,144	18,636
<b>Bhutan</b>	<b>105,559</b>	<b>90,552</b>	<b>196,111</b>	<b>228,036</b>	<b>210,835</b>	<b>438,871</b>	<b>333,595</b>	<b>301,387</b>	<b>634,982</b>

## 1.2 Urban-rural population distribution

The urban-rural classification used in the PHCB 2005 was according to the classification of the Department of Urban Development and Engineering Services, Ministry of Works and Human Settlement. The urban centres consisted of twenty Dzongkhag headquarters and other areas recognized as urban.

More than two-thirds (69.1%) of the population lived in rural areas while only about one-third (30.9%) lived in the urban areas. Among the Dzongkhags, the largest urban population was in Thimphu with over 85 percent, while the least urbanized was Gasa which had an urban population of 402 (Table 1.1).

## 1.3 Age composition

Population distributed by 5-year age intervals indicate a decreasing number of persons at younger ages, which may be attributable to the declining fertility rates over the recent decade. The rising level of enrolment, women's economic participation and awareness on family size would have influenced couples' decisions to defer and limit the number of births. The change in the level of fertility has direct impact upon the age structure of the population that is characterized by the declining proportion of population at younger ages.

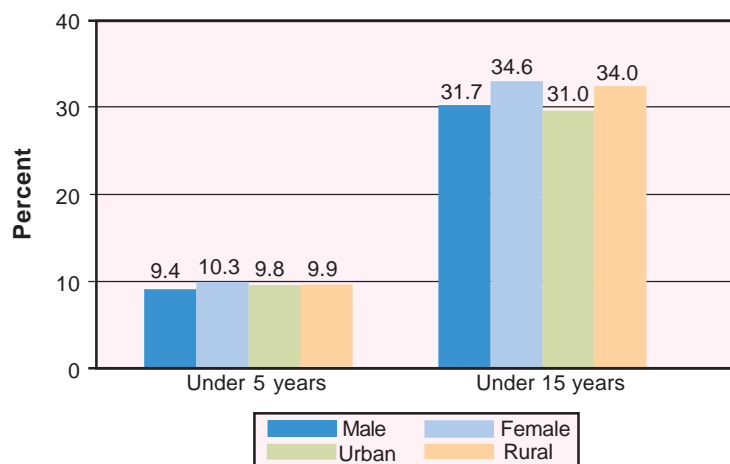
As derived from Table 1.2, median age of the population is observed to be 22.3 years implying that half the population was below the age of 23 years, indicating that a larger portion of the population was young. On the contrary, population in the older age groups i.e. over 65 years constituted only around 5 percent of the total population. Younger population of age 18 years and below was over 40 percent. With falling fertility, it is expected to decrease over the years. Improvement in health as measured by the decreasing mortality and better survival rates, the size of the economically active population age 15 years and over is expected to grow. Ageing of the population or the increase in older age population will happen as a consequence of increasing longevity.

**Table 1.2: Distribution of population by area, sex and age-group, Bhutan, 2005**

Age group	Urban			Rural			Bhutan		
	Male	Female	Both Sex	Male	Female	Both Sex	Male	Female	Both Sex
0 - 4	9,709	9,494	19,203	21,780	21,570	43,350	31,489	31,064	62,553
5 - 9	9,589	9,665	19,254	25,958	25,187	51,145	35,547	34,852	70,399
10 - 14	10,904	11,428	22,332	27,824	26,851	54,675	38,728	38,279	77,007
15 - 19	13,659	13,969	27,628	23,845	23,763	47,608	37,504	37,732	75,236
20 - 24	16,884	12,038	28,922	23,370	18,282	41,652	40,254	30,320	70,574
25 - 29	12,170	9,596	21,766	19,216	16,376	35,592	31,386	25,972	57,358
30 - 34	8,527	6,634	15,161	14,681	12,964	27,645	23,208	19,598	42,806
35 - 39	7,613	5,448	13,061	13,511	12,157	25,668	21,124	17,605	38,729
40 - 44	5,068	3,407	8,475	10,954	10,471	21,425	16,022	13,878	29,900
45 - 49	3,984	2,680	6,664	10,911	10,087	20,998	14,895	12,767	27,662
50 - 54	2,769	1,740	4,509	9,010	8,528	17,538	11,779	10,268	22,047
55 - 59	1,532	1,168	2,700	7,232	6,460	13,692	8,764	7,628	16,392
60 - 64	1,084	1,050	2,134	6,480	5,960	12,440	7,564	7,010	14,574

65 - 69	845	776	1,621	5,154	4,586	9,740	5,999	5,362	11,361
70 - 74	579	654	1,233	3,914	3,595	7,509	4,493	4,249	8,742
75 - 79	337	404	741	2,340	2,164	4,504	2,677	2,568	5,245
80 +	306	401	707	1,856	1,834	3,690	2,162	2,235	4,397
<b>Bhutan</b>	<b>105,559</b>	<b>90,552</b>	<b>196,111</b>	<b>228,036</b>	<b>210,835</b>	<b>438,871</b>	<b>333,595</b>	<b>301,387</b>	<b>634,982</b>

Figure 1.1 shows the proportion of population under 5 years and under 15 years disaggregated by sex and by urban and rural areas. No significant difference between urban and rural areas were observed in the proportion of the children population.



**Figure 1.1: Proportion of population under 5 years and under 15 years of age by sex and area, Bhutan, 2005**

Age composition by Dzongkhag is presented in Table 1.3. Around 10 percent of the total population was under five years while proportion under 15 years was around 33 percent. Dagana had the highest proportion of population under five years with 11 percent while Paro had the lowest with 8 percent. It can be observed that population under 15 years in Paro and Thimphu was about 30 percent while Dagana had 38 percent. The youth population 15-24 years comprised about 23 percent of the population. Amongst Dzongkhags, Thimphu had the highest youth population of 27 percent.

**Table 1.3: Percent distribution of population by age-group and ageing index, Dzongkhag, 2005**

Dzongkhag	< 5	5-9	10-14	15-19	20-24	65+	Ageing index	Total population
Bumthang	8.5	9.9	12.4	12.1	12.1	6.2	20.2	16,116
Chhukha	9.4	10.5	10.7	10.6	13.4	2.6	8.6	74,387
Dagana	11.4	13.0	13.6	11.9	8.7	4.5	11.8	22,670
Gasa	10.4	11.5	10.8	9.1	10.5	5.5	16.7	3,116
Haa	8.5	10.6	12.6	12.8	10.1	4.9	15.3	11,648
Lhuentse	10.3	12.8	12.4	12.4	7.5	6.8	19.1	15,395
Monggar	10.3	11.8	12.8	12.8	9.0	5.6	16.1	37,069
Paro	8.4	10.0	11.4	11.9	12.6	5.3	17.7	36,433
Pemagatshel	9.3	10.9	12.8	13.3	7.8	7.8	23.6	22,287
Punakha	9.4	11.5	12.0	14.2	9.5	5.3	16.2	23,462
Samdrup								

jongkhar	11.0	12.2	12.8	10.4	9.4	4.5	12.5	33,889
Samtse	10.0	11.3	12.5	10.8	10.6	4.8	14.2	60,100
Sarpang	10.4	11.6	12.2	11.6	11.0	3.6	10.6	37,101
Thimphu	9.7	9.4	10.8	11.6	15.6	2.9	9.6	92,929
Trashigang	9.9	11.9	13.0	13.4	9.6	5.5	15.6	48,783
Trashiyangtse	10.9	12.4	13.0	12.3	8.1	5.4	14.9	17,740
Trongsa	9.9	11.8	12.5	11.6	9.2	6.9	20.1	13,419
Tsirang	10.4	10.6	12.9	11.9	9.7	5.5	16.2	18,667
Wangdue	10.1	11.5	12.3	11.3	10.1	5.7	16.9	31,135
Zhemgang	9.7	11.6	14.0	13.6	8.8	6.5	18.5	18,636
<b>Bhutan</b>	<b>9.9</b>	<b>11.1</b>	<b>12.1</b>	<b>11.8</b>	<b>11.1</b>	<b>4.7</b>	<b>14.2</b>	<b>634,982</b>

#### 1.4 Ageing index

Ageing index is the ratio of population 65 years and above to the population of children below 15 years for every 100 persons. The ageing index is an indicator to find the composition of child population against elderly persons that indicates the ageing of a population. Figure 1.2 shows the ageing index at 14.2 which means for every 100 children below 15 years, there were at least 14 people of 65 years and above. The index increases when the longevity of life increases and fertility continue to decline. Pemagatshel Dzongkhag had the highest ageing index with 23.6 while Chukha had the least ageing index of 8.6.

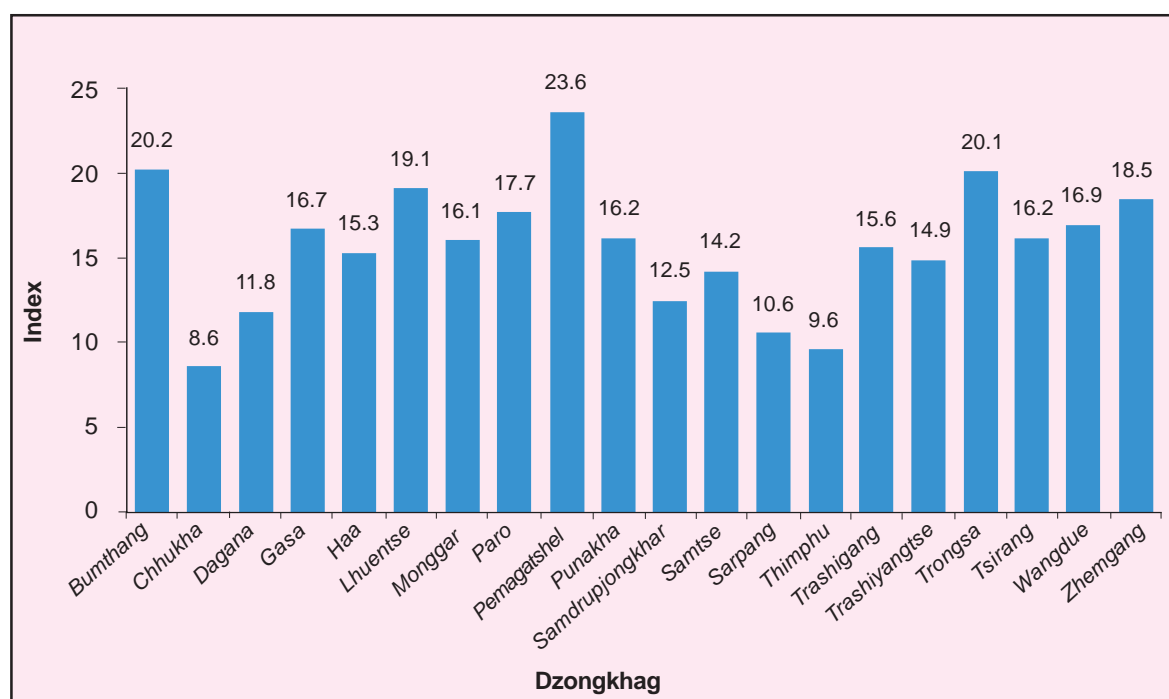


Figure 1.2: Ageing index, Bhutan, 2005

#### 1.5 Sex ratio

The sex ratio of the population is an important indicator as it is influenced by various factors that are biological as well as social and economic factors. In Bhutan, the overall sex ratio, was 111 males for every 100 females (Table 1.4). Sex ratio varies by urban and rural place of residence, with 117 in urban areas as compared to 108 in rural areas. The higher sex ratio in urban areas was influenced significantly by the migration of expatriate workers. In Bhutan, high sex ratio is attributable mainly to the sex selective import of foreign expatriate labour for various development projects.

The sex ratio at birth was 101 males for every 100 female births which is biologically determined in the absence of any sex preference in society. It implies absence of female foeticide. Normally, the sex ratio at birth is around 101 to 105 and the result of PHCB 2005 conforms to these biological limits. The excess of males at birth was gradually offset by the high mortality experienced by the males as age progresses. This effect continued all through life and by age 65, the number of females surpassed that of males, a phenomenon that can be observed in any population. The female life expectancies are therefore comparatively higher than that of males and this aspect can also be observed in the population in Bhutan. So more females than males were found in ages beyond 65 years.

Overall sex ratio differs by Dzongkhag and the least was observed in Pemagatshel with 99 males to 100 females while the highest was observed in Chhukha with 132 males to every 100 females.

**Table 1.4: Sex ratio, average household size, Dzongkhag, 2005**

Dzongkhag	Sex ratio at birth	Overall Sex ratio	Average household Size	Total Households
Bumthang	126.2	118.8	4.9	2,870
Chhukha	101.6	131.8	4.5	14,482
Dagana	106.5	103.0	5.0	4,350
Gasa	89.5	110.4	3.9	727
Haa	118.1	117.2	4.4	2,290
Lhuentse	99.4	100.8	4.7	3,001
Monggar	94.8	101.7	4.6	7,348
Paro	93.4	112.6	4.7	7,118
Pemagatshel	100.0	99.4	4.1	4,881
Punakha	102.6	104.3	4.6	4,564
Samdrupjongkhar	94.1	106.1	4.5	6,951
Samtse	103.1	108.7	5.0	11,634
Sarpang	97.0	108.8	4.7	7,346
Thimphu	107.0	119.1	4.6	18,512
Trashigang	101.2	104.4	4.3	10,281
Trashiyangtse	87.7	99.8	4.3	3,764
Trongsa	121.2	104.9	4.6	2,739
Tsirang	95.9	104.0	5.0	3,651
Wangdue	97.0	106.8	4.5	6,227
Zhemgang	102.1	103.8	4.8	3,379
<b>Bhutan</b>	<b>101.1</b>	<b>110.7</b>	<b>4.6</b>	<b>126,115</b>

### 1.6 Average household size

Average size of household is the number of members living together in a household. Information on household and housing characteristics were collected from the regular households excluding institutions, hostels, boarding houses, prisons and transient population.

It was found that 580,336 persons lived in 126,115 regular households indicating that the national average household size was 4.6 persons per household.

## Chapter 2: Fertility

Fertility, which is a child bearing performance of women in reproductive age group, measures the capacity of the population to increase through addition of newborn population. The level of fertility determines the overall size of the population as well as the age and sex structure of a population. The PHCB results also provide data needed to calculate the various fertility indicators, such as crude birth rate, total fertility rate, and age specific fertility rate. Indicators of fertility are useful in formulating population policies, strategic programs and in projecting populations.

### 2.1 Crude birth rate (CBR)

It is the effect of the births that increases the population by adding new persons. There are several indices that measure the rate of fertility. One of the simplest and basic measures is the CBR which is the ratio of number of live births in a year per 1,000 population.

Table 2.1 shows that the CBR of Bhutan was 19.7 indicating that there were around 20 live births for every 1,000 population. Differences in the level of CBR were observed across Dzongkhags. The highest birth rates were found in Trashiyangtse, Dagana and Gasa with the CBR of 24.0, 23.8 and 23.1 respectively. Paro and Chhukha had comparatively the lowest birth rates of around 17.

Births rates in urban areas are generally expected to be lower than the rural areas. However, no significant differences were observed between urban and rural areas. Nonetheless, the urban-rural differences were distinct within the Dzongkhags. The largest difference of CBR between urban and rural areas was observed in Tsirang where urban and rural CBR were 32 and 19 respectively.

Among urban areas, the lowest CBR of about 13 was observed in Punakha. Rural areas in Bumthang and Paro had the least CBR of about 17 while Dagana and Trashiyangtse had the highest CBR of around 25.

**Table 2.1: Crude birth rate by area, Dzongkhag, 2005**

Dzongkhag	Urban	Rural	Both areas
Bumthang	21.2	16.5	17.7
Chhukha	16.6	16.9	16.8
Dagana	18.6	24.5	23.8
Gasa	24.9	22.8	23.1
Haa	16.4	17.9	17.6
Lhuentse	13.6	21.6	20.9
Monggar	19.6	23.1	22.4
Paro	20.5	16.5	16.8
Pemagatshel	23.9	17.3	18.3
Punakha	12.7	20.5	19.8
Samdrupjongkhar	28.5	18.4	21.4
Samtse	21.2	19.4	19.7
Sarpang	20.9	18.9	19.5
Thimphu	19.1	17.2	18.8
Trashigang	18.0	21.8	21.3
Trashiyangtse	21.5	24.5	24.0
Trongsa	19.3	22.4	21.8
Tsirang	32.4	19.4	20.6
Wangdue	23.3	20.1	20.9
Zhemgang	14.8	21.5	20.3
<b>Bhutan</b>	<b>19.6</b>	<b>19.8</b>	<b>19.7</b>

## **2.2 General fertility rate (GFR)**

GFR is the ratio of the number of births during a year to the population of women at child bearing ages 15-49 years expressed as per 1,000 women. It is a refinement of the CBR by restricting the denominator to women in childbearing ages.

The GFR was 79.4 in Bhutan indicating that there were about 80 births per 1,000 women in childbearing ages. As depicted in Table 2.2, GFR varied by place of residence. The GFR of 84 in rural areas was comparatively much higher than in urban areas of around 72. Among Dzongkhags, Gasa and Trashiyangtse had the highest GFR of 102, while Paro had the lowest with 66.

## **2.3 General marital fertility rate (GMFR)**

The GFR remains a crude measure of fertility because unmarried, divorced and widowed women of reproductive ages, whose potential for childbirth is minimal, are included. The GMFR is a refined measure of fertility that is obtained as a ratio of number of births to 1,000 married women in the reproductive ages.

As observed in Table 2.2, GMFR was about 127 with rural GMFR (129) slightly higher than urban areas (122). Trashiyangtse recorded the highest GMFR of 165 while Chukha had the lowest with 107. Among urban areas, Pemagatshel had the highest GMFR with 174 while Chukha observed the least (96). Among rural areas, Trashiyangtse recorded the highest GMFR of around 164.

## **2.4 Total fertility rate (TFR)**

The TFR is the average number of children a woman would bear during her entire reproductive life span, at the prevailing schedule of age-specific fertility. The TFR is a refined measure of fertility that can be calculated based on age specific fertility rates (ASFR), the sum of which provides the total fertility rate. The TFR of 2.5 in Bhutan, based on the number of births in the past one year preceding the census date, implies that a woman would bear on an average 2.5 births in her entire reproductive life. Women in urban areas had a TFR of 2.1 compared to 2.7 in the rural areas.

As observed in table 2.2, Trashiyangtse recorded the highest TFR of 3.5 while Thimphu had the lowest rate of 2.0.

In urban areas, Pemagatshel had the highest TFR of 3.4 while Chukha had the least (1.7) In the rural areas, Trashiyangtse observed the highest TFR of 3.7.



**Table 2.2: GFR, GMFR and TFR by area, based on the births in the past one year, Dzongkhag, 2005**

Dzongkhag	GFR (per 1,000 women)			GMFR (per 1,000 women)			TFR (per woman)		
	Urban	Rural	Both areas	Urban	Rural	Both areas	Urban	Rural	Both areas
Bumthang	89.9	73.0	77.5	142.9	133.9	136.6	2.6	2.4	2.5
Chhukha	58.7	81.2	69.5	95.7	118.0	107.1	1.7	2.5	2.1
Dagana	68.1	100.9	96.5	144.5	140.5	140.8	3.0	3.2	3.1
Gasa	116.3	100.3	102.3	172.4	148.7	151.6	2.7	3.1	3.1
Haa	56.2	78.6	72.8	125.4	117.6	119.1	2.5	2.5	2.5
Lhuentse	52.9	94.0	89.7	103.6	146.7	143.0	2.1	3.2	3.1
Monggar	69.5	95.5	89.9	139.6	145.0	144.0	2.5	3.1	3.0
Paro	82.9	64.2	65.6	134.2	117.3	118.7	2.2	2.1	2.1
Pemagatshel	95.9	74.3	77.7	173.6	121.0	128.6	3.4	2.7	2.8
Punakha	39.8	84.0	78.5	127.2	139.6	138.8	1.8	2.8	2.7
Samdrupjongkhar	112.1	77.5	88.1	150.0	112.6	124.7	2.9	2.6	2.8
Samtse	72.2	78.1	77.0	111.2	115.2	114.4	2.0	2.4	2.3
Sarpang	78.0	76.5	77.0	117.1	107.4	110.5	2.2	2.3	2.3
Thimphu	68.9	79.6	70.2	119.8	126.3	120.7	2.0	2.4	2.0
Trashigang	64.3	91.1	86.8	146.3	138.8	139.7	2.4	3.1	3.0
Trashiyangtse	78.9	107.1	101.5	171.5	164.2	165.3	3.1	3.7	3.5
Trongsa	77.6	96.5	92.5	123.8	162.7	154.1	2.3	3.1	3.0
Tsirang	114.6	78.0	81.7	166.2	118.0	123.0	3.2	2.6	2.7
Wangdue	97.2	83.4	86.7	146.3	137.2	139.6	2.9	2.8	2.8
Zhemgang	54.6	95.3	86.8	112.1	140.2	135.7	2.0	3.2	3.0
<b>Bhutan</b>	<b>71.5</b>	<b>83.5</b>	<b>79.4</b>	<b>121.7</b>	<b>128.7</b>	<b>126.5</b>	<b>2.1</b>	<b>2.7</b>	<b>2.5</b>

## 2.5 Age-specific fertility rate (ASFR)

The ASFR is the number of births by age of mother per 1,000 women in the specific age-group. The ASFR in table 2.3 is based on the births in the past one year preceding the enumeration date. It is noticed that age-group 25-29 years had the highest fertility of 142. The ASFR is normally the lowest in the younger age groups and the highest for the age-group 25-29 years women after which the fertility declines for older women beyond age 30 years. As compared to other Dzongkhags, Gasa had the highest ASFR of over 240 in the age-group 20-24 years.

**Table 2.3: Age-specific fertility rate (per 1,000 women) by age-group, Dzongkhag, 2005**

Dzongkhag	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49
Bumthang	26.7	134.3	138.0	103.3	63.1	27.4	9.4
Chhukha	32.8	121.	114.0	69.6	39.3	28.8	6.2
Dagana	58.7	193.5	138.3	114.4	64.0	45.8	11.8
Gasa	37.3	240.3	138.5	106.8	54.1	49.2	0.0
Haa	28.1	144.4	147.7	74.9	40.9	47.8	8.4
Lhuentse	37.9	193.8	137.4	103.4	89.4	37.0	14.7
Monggar	44.4	153.4	172.4	108.7	70.2	35.5	11.2
Paro	22.0	107.2	129.3	86.7	45.8	19.5	7.0
Pemagatshel	28.2	169.2	139.3	88.5	75.2	48.2	10.1
Punakha	29.0	149.2	145.1	115.6	65.9	35.6	7.3
Samdrupjongkhar	45.1	161.8	146.6	99.4	52.5	40.2	15.4
Samtse	50.5	138.1	131.7	73.0	40.2	23.7	9.2
Sarpang	45.6	147.9	135.0	74.8	34.6	10.9	7.7
Thimphu	22.4	101.3	139.9	74.9	41.3	19.6	6.0
Trashigang	35.9	151.6	168.2	100.4	73.0	46.5	14.8
Trashiyangtse	38.7	182.8	190.9	138.8	92.5	50.1	9.6

Trongsa	55.5	168.5	147.2	97.7	72.8	33.9	21.9
Tsirang	48.3	148.2	145.4	89.2	59.4	27.0	13.7
Wangdue	35.3	168.1	151.7	107.3	65.5	24.6	4.6
Zhemgang	39.2	170.2	153.1	103.0	64.7	51.8	16.6
Urban	22.1	115.3	138.8	78.1	39.5	18.8	7.1
Rural	44.9	154.4	143.2	95.3	61.3	35.3	10.7
<b>Bhutan</b>	<b>36.5</b>	<b>138.9</b>	<b>141.6</b>	<b>89.4</b>	<b>54.5</b>	<b>31.3</b>	<b>9.9</b>

## 2.6 Teenage fertility

The teenage fertility is the proportion of women aged 15-19 years who currently gave birth. The proportion of marital union is directly related to childbearing behaviour. An overall 3.7 percent of teenage women in the age group of 15-19 years had given birth. It is observed that 9.7 percent of both males and females teenage population were married. The proportion of teenage females who were married was over 15 percent as compared to around 4 percent for males. Higher rates were observed in Gasa, Samdrupjongkhar, Dagana, Samtse and Sarpang where over 20 percent of the teenage girls were married. Punakha, Paro and Bumthang recorded the lowest percentage of female teenage marriages of below 10 percent. Dagana had the highest proportion (17 %) of teenage females who gave birth. Of all the births taken place in 2005, 11 percent had occurred to mothers below 20 years of age (Table 2.4).

**Table 2.4: Proportion of teenager (15-19) by marriage, births and Dzongkhag, 2005**

Dzongkhag	Proportion married			Females who gave birth (%)	CEB (per 1000)
	Male	Female	Both Sex		
Bumthang	3.2	9.8	6.1	6.5	65.1
Chhukha	3.6	16.5	10.3	10.5	105.2
Dagana	7.4	22.7	15.6	16.8	167.9
Gasa	4.0	23.1	13.0	14.2	141.8
Haa	1.6	12.3	7.0	7.1	70.9
Lhuentse	3.3	17.3	10.1	12.5	124.6
Monggar	6.0	17.3	11.7	11.8	117.8
Paro	1.8	8.9	5.4	6.7	67.2
Pemagatshel	2.0	12.6	7.1	7.8	78.2
Punakha	2.0	8.6	5.3	6.4	64.0
Samdrupjongkhar	5.9	23.1	14.6	13.1	131.5
Samtse	4.6	22.0	13.5	14.8	148.0
Sarpang	3.4	21.6	12.6	12.3	122.7
Thimphu	1.8	10.3	6.2	7.1	70.5
Trashigang	5.6	13.8	9.5	7.8	78.3
Trashiyangtse	3.9	11.5	7.7	7.7	77.4
Trongsa	3.8	13.5	8.5	11.0	109.6
Tsirang	4.8	19.2	12.1	13.6	136.1
Wangdue	3.9	14.9	9.2	10.6	105.9
Zhemgang	5.9	16.7	11.1	11.7	116.7
<b>Bhutan</b>	<b>3.8</b>	<b>15.4</b>	<b>9.7</b>	<b>10.2</b>	<b>101.6</b>

## 2.7 Fertility by socio-economic background

The level of fertility is directly related to the socio-economic status of women and the environment in which they live in.

The level of fertility was much higher for households that did not possess TV/Video than households with TV/Video. Average number of children born by a mother who did not have a car is over 37 percent higher than those with a car. Farther the distance from road head, the higher was the fertility. A significant difference in the level of TFR is observed by mothers' literacy. Illiterate mothers on an average gave birth to 3.1 children as compared to 1.9 births for literate mothers (Figure 2.1).

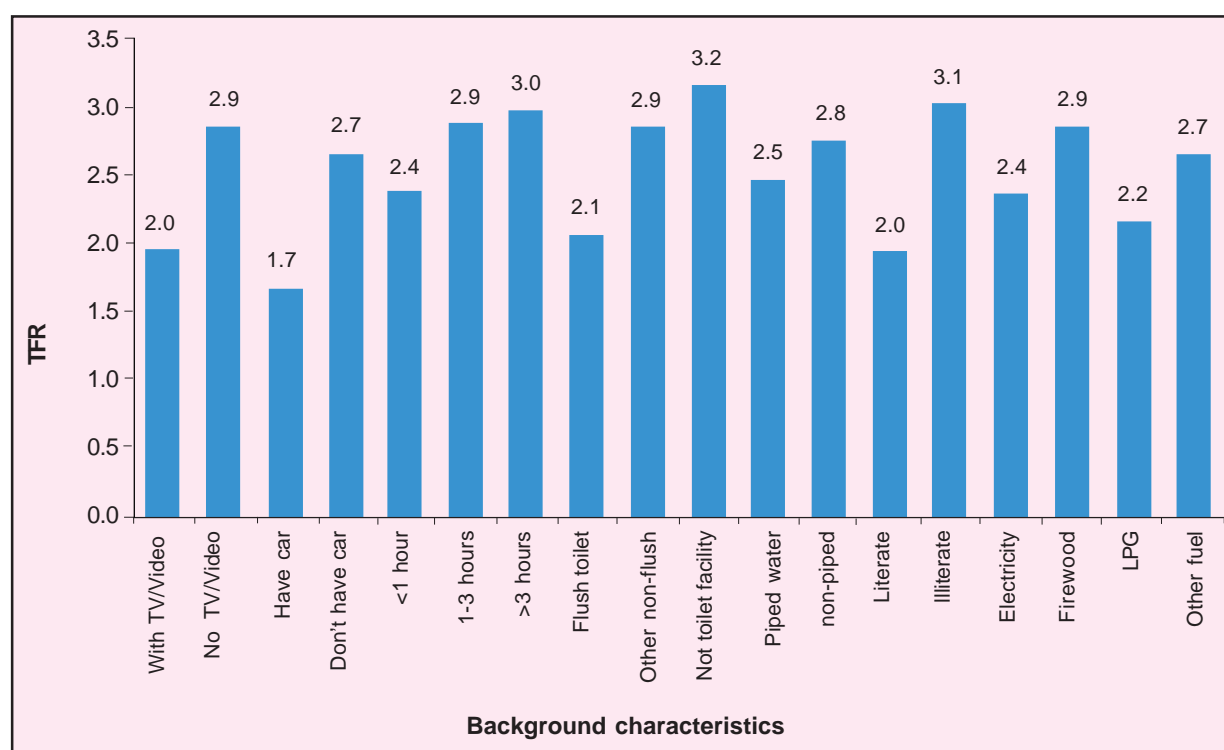


Figure 2.1: TFR by socio-economic background of household/mother, Bhutan, 2005

## 2.8 Birth attendance

Attendance at birth by health professionals has an important impact on the survival and health status of a child and the mother. There were a total of 12,570 women who gave birth in the past one year before the census date. Of them, 8,701 or 69 percent were living in rural areas while the rest 3,869 were in urban areas.

Of the total births, over 50 percent of the births were attended by health professionals. It is observed in Table 2.5 that 75 percent of the total births in urban areas were attended by health professionals as compared to only 40 percent attendance in the rural areas.

**Table 2.5: Births attended by health professionals by area, Bhutan, 2005**

Area	Total women	Total births	% of births attended
Urban			
Attended	2,916	2,896	75.3
Not attended	953	949	24.7
Total	3,869	3,845	100.0
Rural			
Attended	3,470	3,480	40.0
Not attended	5,231	5,213	60.0
Total	8,701	8,693	100.0
Bhutan			
Attended	6,386	6,376	50.9
Not attended	6,184	6,162	49.1
Total	12,570	12,538	100.0

## Chapter 3: Mortality

Mortality plays a vital role of determining the size of the population as it has influence on the age structure of the population. Mortality has important utility encompassing demographic analysis, population projections, health administration, developing plans for housing and educational facilities, social security programs, and life insurance policies and services. The quality of data on deaths obtained from vital registration is usually incomplete and inaccurate. Age and sex are the two most important characteristics which form the basis of the detailed analysis of mortality. The PHCB 2005 collected data on mortality by age, sex, occupation and broad categories of causes of death. Of the several measures of mortality, the simplest one is the crude death rate.

### 3.1 Crude death rate (CDR)

Defined as the number of deaths in a year per 1,000 population, CDR is the simplest and commonest measure of mortality level. CDR may be calculated for any period; typically it is calculated for the calendar year or any convenient 12 months period to eliminate seasonal or monthly variations.

Table 3.1 shows 7 deaths per 1,000 persons at national level. The rural rate (8 deaths per 1,000) was slightly higher than in urban areas (5 deaths per 1,000). The CDR ranged from 5 in Sarpang to 12 in Gasa. It is observed that Gasa also recorded the highest urban and rural deaths of 12 and 11 respectively. Trongsa recorded the lowest urban CDR of 2, while Sarpang had the lowest rural CDR of 6.

**Table 3.1: Crude death rate by area and sex, Dzongkhag, 2005**

Dzongkhag	Urban	Rural	Both areas
Bumthang	5.5	7.3	6.8
Chhukha	5.6	7.5	6.6
Dagana	4.8	7.9	7.5
Gasa	12.4	11.4	11.6
Haa	4.4	8.1	7.3
Lhuentse	2.7	8.9	8.3
Monggar	4.1	8.6	7.7
Paro	10.9	6.5	6.9
Pemagatshel	3.9	8.6	7.9
Punakha	4.8	8.0	7.7
Samdrupjongkhar	5.9	6.5	6.3
Samtse	8.2	7.7	7.8
Sarpang	4.1	5.9	5.3
Thimphu	5.3	8.3	5.7
Trashigang	3.7	9.4	8.6
Trashiyangtse	8.6	9.4	9.2
Trongsa	1.9	9.1	7.7
Tsirang	4.8	6.9	6.7
Wangdue	5.6	8.3	7.7
Zhemgang	3.0	7.2	6.4
<b>Bhutan</b>	<b>5.3</b>	<b>7.9</b>	<b>7.1</b>

### 3.2 Age-specific death rate (ASDR)

The ASDR is the ratio of the number of deaths by age of the decedent to the population in each age interval per 1,000 persons. Age-specific death rate may be computed for various segments of the population. The risk of death is highly dependent on age; therefore any refined measure of mortality must take the age structure into account. A study of specific death rates would provide a detailed picture of mortality by age and sex. Table 3.2 shows separate death rates by different age groups, where the rates were usually high at the infancy, dropping to a minimum among the age group of 10-14 years and gradually rising to a maximum at 70 years and above. The death rate in the age-group 70 years and above surpassed the infant death rate. The under one year (infant) had the maximum deaths of 41 per 1,000 infants. Trashigang recorded the highest with 68 deaths while Gasa had none.

**Table 3.2 (a): Age-specific death rate by age-group, Dzongkhag, 2005**

Dzongkhag	Under 1	1- 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39
Bumthang	31.0	2.7	0.6	1.5	0.5	1.0	2.0	4.9	5.5
Chhukha	29.9	12.8	4.1	1.6	2.4	1.4	1.5	2.5	4.4
Dagana	47.8	6.8	2.7	0.6	1.5	2.5	4.0	1.5	6.4
Gasa	0.0	3.8	0.0	8.9	3.5	3.0	3.4	4.1	5.2
Haa	15.7	10.0	2.4	0.7	0.0	0.0	1.9	5.0	3.8
Lhuentse	55.4	3.1	1.0	1.0	2.6	0.9	10.1	7.8	9.8
Monggar	54.5	5.6	1.6	1.5	1.7	2.1	2.4	4.4	5.1
Paro	23.5	1.6	0.5	1.0	1.2	2.2	1.7	1.9	5.4
Pemagatshel	42.6	2.9	1.2	0.7	1.4	4.1	2.0	3.7	4.4
Punakha	29.5	1.7	1.1	1.8	1.2	2.2	1.7	5.4	4.8
Samdrupjongkhar	67.7	4.3	1.9	1.1	0.6	0.6	1.4	4.1	1.4
Samtse	33.4	5.6	2.4	1.6	2.9	2.0	3.3	2.9	5.5
Sarpang	47.4	5.2	1.6	0.7	2.5	1.2	2.0	2.0	3.1
Thimphu	28.5	3.4	2.2	0.9	0.8	1.0	1.5	2.2	4.5
Trashigang	68.2	6.5	2.2	1.1	2.0	3.0	2.6	7.6	4.4
Trashiyangtse	33.3	3.2	1.4	0.9	2.8	1.4	5.0	4.2	5.5
Trongsa	44.8	0.9	0.0	0.6	2.6	1.6	0.9	4.9	9.1
Tsirang	21.3	3.3	1.5	1.2	2.7	3.9	1.4	2.7	4.8
Wangdue	62.3	4.7	1.1	0.8	0.6	2.9	3.9	3.4	3.8
Zhemgang	35.6	6.2	2.3	0.4	1.2	1.2	3.2	3.0	4.1
<b>Bhutan</b>	<b>40.8</b>	<b>5.4</b>	<b>2.0</b>	<b>1.1</b>	<b>1.7</b>	<b>1.7</b>	<b>2.3</b>	<b>3.4</b>	<b>4.7</b>

**Table 3.2 (b): Age-specific death rate by age-group, Dzongkhag, 2005**

Dzongkhag	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	65 - 69	70 - 74	75 - 79	80 +	Total
Bumthang	8.5	1.5	3.4	9.9	21.2	21.3	38.9	26.3	170.0	6.8
Chhukha	4.9	7.4	7.8	14.1	29.1	41.8	58.3	93.6	169.1	6.6
Dagana	6.8	11.8	3.7	11.3	14.9	31.1	60.0	73.8	106.7	7.5
Gasa	22.7	27.0	8.5	35.3	29.1	94.3	19.6	146.3	40.0	11.6
Haa	6.8	7.7	7.4	22.9	19.9	16.0	59.8	78.4	170.2	7.3
Lhuentse	4.4	12.7	10.6	12.2	12.5	10.1	31.6	32.4	147.9	8.3
Monggar	9.6	7.3	11.2	12.4	19.0	35.3	37.4	61.5	74.3	7.7
Paro	3.4	13.3	13.0	18.5	13.5	38.1	41.6	53.8	153.4	6.9
Pemagatshel	5.2	7.0	6.0	13.3	16.4	23.6	38.7	64.2	110.7	7.9
Punakha	4.6	8.3	9.3	8.5	26.1	33.9	56.9	97.8	156.9	7.7
Samdrupjongkhar	7.1	9.5	6.0	18.3	8.7	14.2	33.8	72.9	84.6	6.3

Samtse	7.2	7.9	10.9	11.8	20.5	27.8	49.3	78.8	155.3	7.8
Sarpang	5.1	3.6	6.9	13.1	12.2	22.1	8.5	61.1	112.1	5.3
Thimphu	4.8	11.8	13.1	24.4	24.2	36.3	48.0	84.8	166.7	5.7
Trashigang	9.9	9.6	11.6	15.8	23.6	35.1	32.7	55.7	87.7	8.6
Trashiyangtse	2.4	15.6	10.3	20.5	32.1	41.3	69.1	63.5	147.1	9.2
Trongsa	1.7	7.3	8.8	5.6	17.2	13.7	54.0	52.0	136.4	7.7
Tsirang	4.4	6.7	8.3	10.0	13.5	38.1	24.6	41.2	167.9	6.7
Wangdue	2.0	11.2	10.6	10.6	24.1	21.6	41.3	52.0	155.2	7.7
Zhemgang	8.0	7.4	3.8	9.0	15.5	12.8	18.7	39.8	122.3	6.4
<b>Bhutan</b>	<b>5.8</b>	<b>9.0</b>	<b>9.3</b>	<b>14.6</b>	<b>20.0</b>	<b>29.1</b>	<b>42.1</b>	<b>65.2</b>	<b>134.4</b>	<b>7.1</b>

### 3.3 Natural population growth

The CDR has a very important practical use. The difference between the CBR and CDR gives the rate of natural increase of a population, which can be used to estimate natural population increase over the years. In the absence of migration, the natural and the population growth rates are the same. It is observed in Table 3.3 that the natural growth rate was 1.3 percent with urban rate (1.4%) slightly higher than rural areas (1.2%). Dzongkhag wise, Chukha, Haa, Paro and Pemagatshel recorded the lowest with 1 percent while Dagana had the highest with 1.6 percent. Generally, the urban growth rate was higher than the rural rate except in Dagana, Lhuentse, Punakha, Trashiyangtse and Zhemgang.

**Table 3.3: Natural population growth rate by area, Dzongkhag, 2005**

Dzongkhag	Urban	Rural	Both areas
Bumthang	1.6	0.9	1.1
Chhukha	1.1	0.9	1.0
Dagana	1.4	1.7	1.6
Gasa	1.3	1.1	1.2
Haa	1.2	1.0	1.0
Lhuentse	1.1	1.3	1.3
Monggar	1.6	1.5	1.5
Paro	1.0	1.0	1.0
Pemagatshel	2.0	0.9	1.0
Punakha	0.8	1.3	1.2
Samdrupjongkhar	2.3	1.2	1.5
Samtse	1.3	1.2	1.2
Sarpang	1.7	1.3	1.4
Thimphu	1.4	0.9	1.3
Trashigang	1.4	1.2	1.3
Trashiyangtse	1.3	1.5	1.5
Trongsa	1.7	1.3	1.4
Tsirang	2.8	1.3	1.4
Wangdue	1.8	1.2	1.3
Zhemgang	1.2	1.4	1.4
<b>Bhutan</b>	<b>1.4</b>	<b>1.2</b>	<b>1.3</b>

### 3.4 Life expectancy at birth

The life expectancy at birth is the number of years the newborn children would live if subject to the mortality risks prevailing for the cross section of population at the time of their birth. Life expectancy is an important indicator to compare the real levels of mortality in a country. The overall life expectancy for both sex in Bhutan was 66.3 years. Female life expectancy was slightly higher (66.9 years) than males (65.7 years).



Among Dzongkhags, Bumthang had the highest life expectancy of 70.3 years while Gasa had the least with 57.8 years. However, lower life expectancy might be affected by even very small number of deaths in a small population base as in the case with Gasa which had a population of barely over 3,000.

**Table 3.4: Life expectancy by sex, Dzongkhag, 2005**

Dzongkhag	Male	Female	Both sex
Bumthang	70.2	70.4	70.3
Chhukha	63.7	62.6	63.2
Dagana	65.6	64.6	65.1
Gasa	58.3	57.3	57.8
Haa	66.9	64.8	66.0
Lhuentse	63.5	69.3	66.6
Monggar	65.3	67.1	66.2
Paro	68.8	66.6	67.6
Pemagatshel	67.8	70.9	69.4
Punakha	63.8	67.2	65.5
Samdrupjongkhar	67.5	68.5	68.1
Samtse	64.0	65.4	64.7
Sarpang	69.7	69.6	69.6
Thimphu	65.5	67.9	66.7
Trashigang	62.8	64.2	63.5
Trashiyangtse	62.4	62.3	62.4
Trongsa	69.3	69.7	69.5
Tsirang	72.1	65.2	68.8
Wangdue	64.6	67.7	66.2
Zhemgang	69.7	70.4	70.1
<b>Bhutan</b>	<b>65.7</b>	<b>66.9</b>	<b>66.3</b>

### 3.5 Child mortality analysis

The child mortality indicators are important measures of health status as the indicators are sensitive to the level of development in a society. Child mortality can further be sub-divided into neo-natal mortality and infant mortality.

The infant mortality rate (IMR) is the number of deaths of children below age one year per 1,000 live births during the reference year. Similarly, child mortality rate (CMR) is the number of deaths of children between 1-4 years per 1,000 live births; and under five mortality rate (U5MR) is the number of deaths of children below 5 years per 1,000 live births.

### 3.6 IMR, CMR and U5MR (Direct method)

The simple direct method, based on deaths prior to one year before census date, yields an IMR of 40 per 1,000 live births and an U5MR of 62 per 1,000 live births.

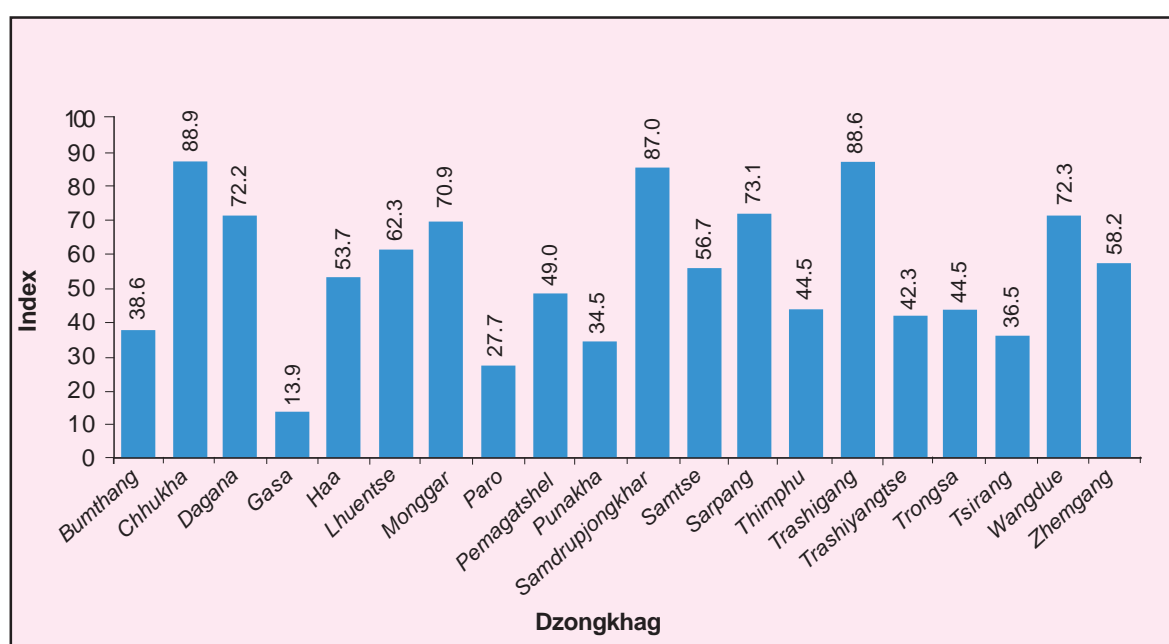
In 2005, there were 772 children deaths before age 5, of whom 503 were below 1 year and 269 were between 1 and 4 years. It is observed in Table 3.5 that IMR was much higher as compared to CMR. Of all the children deaths, over 65 percent were below 1 year while only 35 percent were between 1 and 4 years thus reaffirming the high mortality risks before crossing age one.

As measured by infant mortality, the health of children was worst in Samdrupjongkhar with 69 followed by Trashigang with 64. Samdrupjongkhar and Trashigang also had a high U5MR (Figure 3.1).

**Table 3.5: IMR, CMR AND U5MR from observed deaths, Dzongkhag, 2005**

Dzongkhag	Number of deaths			<5 year pop.	Total births	IMR (<1yr)	CMR (1-4yr)	U5MR (<5yr)
	Age 0	Age 1-4	Total					
Bumthang	8	3	11	1,366	285	28.1	10.5	38.6
Chhukha	38	73	111	6,960	1,248	30.4	58.5	88.9
Dagana	25	14	39	2,576	540	46.3	25.9	72.2
Gasa	0	1	1	325	72	0.0	13.9	13.9
Ha	3	8	11	995	205	14.6	39.0	53.7
Lhuentse	16	4	20	1,582	321	49.8	12.5	62.3
Monggar	42	17	59	3,817	832	50.5	20.4	70.9
Paro	13	4	17	3,045	613	21.2	6.5	27.7
Pemagatshel	15	5	20	2,079	408	36.8	12.3	49.0
Punakha	13	3	16	2,197	464	28.0	6.5	34.5
Samdrupjongkhar	50	13	63	3,743	724	69.1	18.0	87.0
Samtse	40	27	67	6,025	1,182	33.8	22.8	56.7
Sarpang	37	16	53	3,856	725	51.0	22.1	73.1
Thimphu	54	24	78	8,980	1,751	30.8	13.7	44.5
Trashigang	67	25	92	4,843	1,038	64.5	24.1	88.6
Trashiyangtse	13	5	18	1,939	426	30.5	11.7	42.3
Trongsa	12	1	13	1,326	292	41.1	3.4	44.5
Tsirang	9	5	14	1,944	384	23.4	13.0	36.5
Wangdue	35	12	47	3,142	650	53.8	18.5	72.3
Zhemgang	13	9	22	1,813	378	34.4	23.8	58.2
<b>Bhutan</b>	<b>503</b>	<b>269</b>	<b>772</b>	<b>62,553</b>	<b>12,538</b>	<b>40.1</b>	<b>21.5</b>	<b>61.6</b>

Chhukha recorded the highest U5MR of 89 followed by Trashigang and Samdrupjongkhar (Figure 3.1).



**Figure 3.1: Under five mortality rate, Dzongkhag, 2005**

### 3.7 Indirect methods of mortality

In general, indirect methods of estimation provide an alternative to overcome shortcomings of direct methods as the census date might be influenced by non-sampling errors. As noted by the United Nations, demographic measures derived from direct methods sometimes could yield under-estimation of results.

For indirect methods, most often used to estimate mortality levels is the “Brass Method” which utilizes the data on children ever born (CEB), children surviving and children dead by age group of women.

The indirect method utilizes various model life tables, and the mortality levels for each pattern are generated. The choice of the model pattern that best describes the mortality situation for Bhutan is the Coale-Demeny North Model based on which the results of child mortality is analysed.

An examination of the mortality levels in Table 3.6 shows that the mortality estimates for younger age groups are relatively higher than older women. The level of mortality estimates decline steadily with the rise of mother’s age, suggesting a fall in child mortality. The national level estimates of IMR and U5MR are derived from women aged 25-29 years, which were 62 (IMR) and 96 (U5MR) in 2001.

**Table 3.6: Indirect estimates of IMR, CMR and U5MR based on CEB and children dead, Bhutan**

Age of women	Age (x)	Reference Year t(i)	IMR q(1)	CMR 4q1	U5MR q(5)
15-19	Q <sub>1</sub>	2004	0.102	0.073	0.168
20-24	Q <sub>2</sub>	2003	0.067	0.04	0.104
25-29	Q <sub>3</sub>	2001	0.062	0.036	0.096
30-34	Q <sub>4</sub>	1999	0.068	0.041	0.106
35-39	Q <sub>5</sub>	1997	0.077	0.049	0.122
40-44	Q <sub>10</sub>	1994	0.088	0.059	0.142
45-49	Q <sub>20</sub>	1991	0.097	0.067	0.157

The reference period is an estimate of the number of years before the survey date to which the child mortality estimates refer to. Some observations may be made of the results from indirect methods. However, the true trend of child mortality cannot be derived with certainty from the data available because the younger age women displayed erratic level.

IMR and U5MR derived through interpolation for other years between 1991 and 2000 are presented in Table 3.7. Thus, it can be observed that the U5MR in Bhutan had decreased by around 5 percent a year between 1991 and 2000. Based upon the assumption that this decline continued, the estimate for 2005 would be an U5MR of 75 and the corresponding IMR of 50.

**Table 3.7: IMR, U5MR based on CEB and children dead, Bhutan**

Reference year	IMR	U5MR
1991	97	157
1996	83	132
2000	65	101

### 3.8 Mortality by sex

The census results also enable the calculation of the female and male U5MR for Bhutan, and the relation is exactly as it should be according to the model. The total male and female differential for U5MR for Bhutan is displayed in the figure 3.2. As in any population the male mortality is higher than the female U5MR. Thus, with year 2000 U5MR for Bhutan at 101 per 1,000 live births, the male U5MR was 108.8 while female was 92.5.

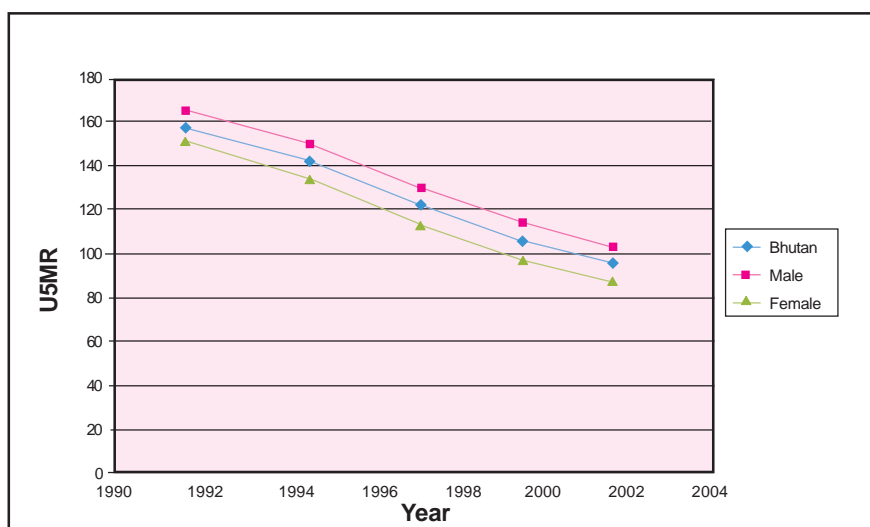


Figure 3.2: Under five mortality rate by sex, Bhutan, 2005

### 3.9 Urban-rural mortality

As indicated in figure 3.3, mortality among children in urban areas was significantly lower than the rural areas. However, it is indicated that the gap between urban and rural areas was getting narrower every year.

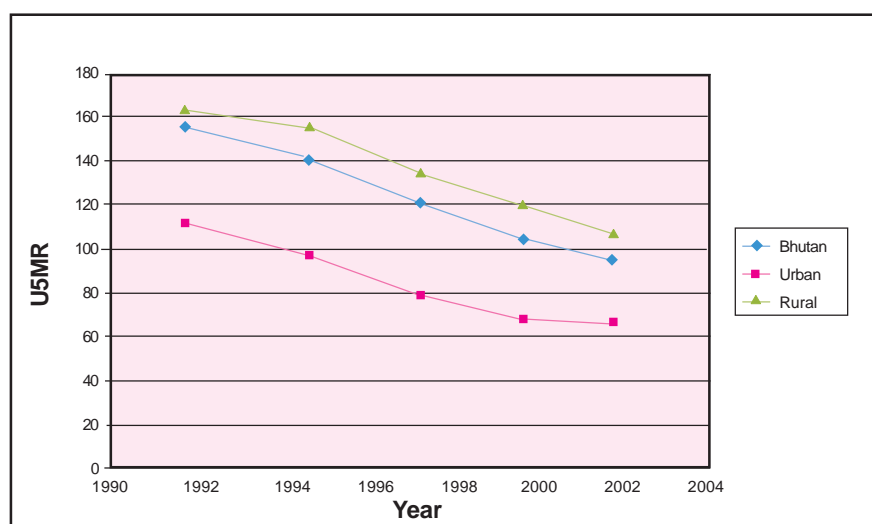


Figure 3.3: Under five mortality rate by area, Bhutan, 2005

### 3.10 IMR by socio-economic background

The table 3.8 summarizes the mortality of children by different socio-economic variables taken for mortality comparison. The proximity to road is an important factor contributing to the level of mortality and therefore the level of IMR was higher in rural areas. It is observed that the IMR for households with TV/Video was

lower as compared with households without TV/Video. Households with literate mothers had lower IMR (59 in 2003) against illiterate mothers (68 in 2003). Households located within one hour from the road head had lower IMR to those households located more than 1 or 3 hours. The difference in mortality levels can be also be compared among households using LPG, electricity and firewood for cooking.

**Table 3.8: IMR by socio-economic background of household/mother, Bhutan**

Household/Mother's background	Reference year					
	1991	1994	1997	1999	2001	2003
<b>(1) Possession of TV/Video</b>						
(i) Have TV/Video	66	59	51	44	41	46
(ii) Don't Have TV/Video	104	96	88	80	72	72
<b>(2) Literacy of mother</b>						
(i) Literate	63	57	52	46	45	59
(ii) Illiterate	98	91	82	74	69	68
<b>(3) Cooking fuel used</b>						
(i) Electricity	87	79	65	55	51	52
(ii) LPG	72	65	56	47	45	48
(ii) Firewood	104	96	89	82	75	78
<b>(4) Children Ever Born</b>						
(i) Male children	104	96	84	74	68	77
(ii) Female children	89	80	70	61	56	56
<b>(5) Distance to road head</b>						
(i) < 1 Hr	89	80	69	60	55	57
(ii) 1 - 3 Hr	101	98	91	78	72	77
(ii) 3 + Hr	109	103	94	90	81	88
<b>(6) Area</b>						
(i) Urban	72	64	53	47	46	52
(ii) Rural	101	93	85	76	69	73

### 3.11 CMR by socio-economic background

Like the IMR, a similar trend is observed with CMR. The level of CMR was higher in rural areas (27 in 2003) than urban areas (45 in 2003). The CMR was lower for households that had TV/Video as compared with households without TV/Video. Households with literate mothers had lower CMR against illiterate mothers. Households located within one hour from the road head had lower CMR compared to those households located more than 1 or 3 hours.

**Table 3.9: CMR by socio-economic background of household/mother, Bhutan, 2005**

Household/Mother's background	Reference year					
	1991	1994	1997	1999	2001	2003
<b>(1) Possession of TV/Video</b>						
(i) Have TV/Video	39	33	27	21	19	23
(ii) Don't Have TV/Video	75	67	59	51	44	45
<b>(2) Literacy of mother</b>						
(i) Literate	36	32	27	23	21	33
(ii) Illiterate	69	61	53	46	41	41
<b>(3) Cooking fuel used</b>						
(i) Electricity	58	50	38	29	27	28
(ii) LPG	44	38	30	23	22	24

(iii) Firewood	75	67	60	53	46	50
<b>(4) Children Ever Born</b>						
(i) Male children	69	61	51	43	38	45
(iii) Female children	66	57	47	38	33	34
<b>(5) Distance to road head</b>						
(i) < 1 Hr	60	52	42	34	30	32
(ii) 1 - 3 Hr	72	70	62	49	44	49
(iii) 3 + Hr	80	75	65	61	53	59
<b>(6) Area</b>						
(i) Urban	44	37	28	23	22	27
(ii) Rural	72	64	56	48	42	45

### 3.12 U5MR by socio-economic background

Table 3.10 shows a similar trend for U5MR, alike IMR and CMR. It is observed that U5MR for children living in households located more than one hour away from road was the highest, where one out of seven children would die before reaching 5 years.

The observations based on the 2003 reference year may be made to draw comparisons. The U5MR in households without TV/Video was almost double (114) than those with TV/Video (68). The U5MR for children of illiterate mothers was also much higher (106) than that of literate mothers (90). The U5MR in households using LPG and electricity was lower than those households using firewood while the U5MR for children living more than 3 hours away from the road head was 62 percent higher than households living less than 1 hour away. The U5MR in rural areas (115) was higher than the urban areas (77).

**Table 3.10: U5MR by socio-economic background of household/mother, Bhutan, 2005**

Household/Mother's background	Reference year					
	1991	1994	1997	1999	2001	2003
<b>(1) Possession of TV/Video</b>						
(i) Have TV/Video	102	90	76	64	59	68
(ii) Don't Have TV/Video	171	157	141	127	113	114
<b>(2) Literacy of mother</b>						
(i) Literate	97	87	77	68	65	90
(ii) Illiterate	160	146	130	117	107	106
<b>(3) Cooking fuel used</b>						
(i) Electricity	140	125	100	83	76	78
(ii) LPG	113	101	84	69	66	70
(iii) Firewood	171	157	143	131	118	125
<b>(4) Children Ever Born</b>						
(i) Male children	165	151	130	114	104	119
(ii) Female children	149	132	113	97	87	88
<b>(5) Distance to road head</b>						
(i) < 1 Hr	144	128	108	92	83	87
(ii) 1 - 3 Hr	166	161	147	123	113	122
(iii) 3 + Hr	180	170	152	145	130	141
<b>(6) Area</b>						
(i) Urban	113	98	80	69	67	77
(ii) Rural	165	152	136	121	108	115

### 3.13 IMR, CMR and U5MR by Dzongkhag

Table 3.11 shows the indirect estimates of infant mortality, child mortality and U5MR for all the 20 Dzongkhags. It is observed that the mortality rates were decreasing over the years. Among Dzongkhags, Gasa had the highest IMR followed by Trashiyangtse, Trashigang, Zhemgang, Monggar, Samdrupjongkhar, Lhuentse and Pemagatshel. Gasa also had the highest CMR and U5MR. The mortality rates were comparatively lower in Thimphu, Paro, Chukha and Bumthang.

**Table 3.11: IMR, CMR and U5MR, Dzongkhag**

Dzongkhag / Reference year	IMR	CMR	U5MR
<b>Bumthang</b>			
1991	65.0	38.0	100.0
1996	67.0	40.0	104.5
2000	55.0	30.0	83.5
<b>Chhukha</b>			
1991	87.0	58.0	139.0
1996	70.5	43.0	110.5
2000	52.0	27.5	78.5
<b>Dagana</b>			
1991	94.0	65.0	154.0
1996	83.5	55.0	133.5
2000	68.0	41.0	106.0
<b>Gasa</b>			
1991	138.0	111.0	234.0
1996	123.5	96.5	208.5
2000	125.5	98.5	211.5
<b>Haa</b>			
1991	76.0	48.0	121.0
1996	74.0	46.0	116.0
2000	66.5	39.0	103.0
<b>Lhuentse</b>			
1991	104.0	75.0	171.0
1996	83.0	54.0	132.5
2000	75.5	48.0	120.0
<b>Monggar</b>			
1991	96.0	67.0	156.0
1996	91.5	62.5	148.0
2000	86.0	57.0	137.5
<b>Paro</b>			
1991	91.0	62.0	147.0
1996	76.5	48.5	121.5
2000	49.5	25.0	73.5
<b>Pemagatshel</b>			
1991	112.0	84.0	107.0
1996	98.0	69.0	89.0
2000	72.0	44.0	62.0



<b>Punakha</b>			
1991	107.0	78.0	177.0
1996	89.0	60.0	143.5
2000	62.0	36.0	96.0
<b>Samtse</b>			
1991	73.0	45.0	115.0
1996	65.0	38.0	100.5
2000	52.0	27.0	78.0
<b>Sarpang</b>			
1991	78.0	50.0	125.0
1996	66.5	39.5	103.0
2000	56.0	30.5	85.5
<b>Samdrupjongkhar</b>			
1991	115.0	87.0	192.0
1996	104.5	75.5	172.0
2000	85.5	57.0	137.5
<b>Thimphu</b>			
1991	72.0	44.0	112.0
1996	60.0	34.0	91.5
2000	47.5	23.0	69.5
<b>Trashigang</b>			
1991	118.0	90.0	197.0
1996	100.5	72.0	165.0
2000	87.5	58.5	141.5
<b>Trashiyangtse</b>			
1991	146.0	118.0	247.0
1996	139.5	112.0	236.0
2000	105.5	77.5	174.0
<b>Trongsa</b>			
1991	110.0	82.0	184.0
1996	88.0	59.5	142.0
2000	63.0	36.5	97.5
<b>Tsirang</b>			
1991	83.0	54.0	132.0
1996	65.0	37.5	100.0
2000	52.0	27.0	77.5
<b>Wangdue</b>			
1991	101.0	72.0	166.0
1996	85.0	56.5	136.5
2000	61.5	35.5	95.5
<b>Zhemgang</b>			
1991	107.0	79.0	178.0
1996	90.0	61.0	145.5
2000	87.0	58.0	140.0
<b>Bhutan</b>			
1991	97.0	67.0	157.0
1996	82.5	54.0	132.0
2000	65.0	38.5	101.0

## Chapter 4: Migration

Migration is a geographical or spatial mobility from one geographical unit to another, generally involving a change in residence from the place of origin or departure to the place of destination. Migration is one of the three components that bring about change in population size, age-sex structure and social-economic conditions. Migration data is useful in the preparation of population estimates. Migration will also affect business cycle, industry growth and employment and unemployment status due to supply of skilled and unskilled migrant workers. Besides, there may be social and psychological effects of migration on the migrants and on the population of sending and receiving areas.

### 4.1 Life time migration

The life time migrants are those persons whose area of residence at the census date differs from the area of birth. An in-migrant is a person who enters a geographical area crossing its boundary from a place outside it within the same country, while an out-migrant is a person who departs a geographical area crossing its boundary to another place outside it, within the same country. Net-migration is the difference between in-migration and out-migration.

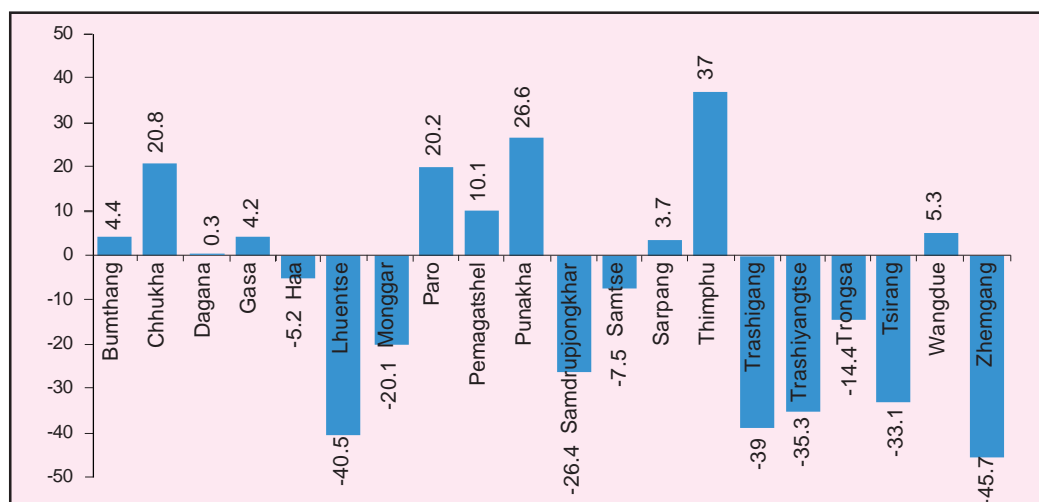
Table 4.1 shows the life time migration irrespective of duration. Over the years, exactly 50 percent of the Dzongkhags gained in population while the other half lost their population. In absolute number, Thimphu received the highest migrants (34,378) while Gasa received the least (67). Trashigang lost the maximum population (19,046) while Haa lost the least (606).

**Table 4.1: Life time migration between Dzongkhags, for all duration, 2005**

Dzongkhag	Population	Out- migration	In-migration	Net-migration	
				No. of persons	Proportion to population
Bumthang	16,116	4,347	5,050	703	4.4
Chhukha	74,387	9,471	24,951	15,480	20.8
Dagana	22,670	7,271	7,338	67	0.3
Gasa	3,116	550	681	131	4.2
Haa	11,648	4,484	3,878	(606)	(5.2)
Lhuentse	15,395	8,038	1,801	(6,237)	(40.5)
Monggar	37,069	12,871	5,418	(7,453)	(20.1)
Paro	36,433	7,382	14,759	7,377	20.2
Pemagatshel	22,287	7,965	10,218	2,253	10.1
Punakha	23,462	5,343	11,584	6,241	26.6
Samdrupjongkhar	33,889	17,537	8,597	(8,940)	(26.4)
Samtse	60,100	15,336	10,839	(4,497)	(7.5)
Sarpang	37,101	15,071	16,460	1,389	3.7
Thimphu	92,929	17,788	52,166	34,378	37.0
Trashigang	48,783	26,004	6,958	(19,046)	(39.0)
Trashiyangtse	17,740	8,509	2,238	(6,271)	(35.3)
Trongsa	13,419	5,542	3,606	(1,936)	(14.4)
Tsirang	18,667	11,308	5,133	(6,175)	(33.1)
Wangdue	31,135	8,063	9,714	1,651	5.3
Zhemgang	18,636	12,028	3,519	(8,509)	(45.7)

Note: Figures in the parenthesis indicate negative migration

Figure 4.1 shows that as a proportion to its 2005 population, Thimphu gained by 37 percent while Dagana gained less than one percent. Zhemgang lost most of its population (46%) followed by Lhuentse (41%) and Trashigang (39%). Haa lost the least (5 %).



**Figure 4.1: Net migration proportion to population, Bhutan, 2005**

It is important to assess the migration between Dzongkhags within a specified period of time to calculate an annual migration rate considering that migration pattern remains constant. During the 5 years prior to the census date, Zhemgang, Trashiyangtse, Trashigang, and Lhuentse were losing about 15 percent of its base population. Thimphu, Chukha, Paro were receiving the maximum number of migrants. Net annual migration rate varied from -3.1 percent in Dagana to 2.3 percent in Thimphu (Table 4.2).

**Table 4.2: Life time migration between Dzongkhags, one to five years, 2005**

Dzongkhag	Population	Out-migration	In-migration	Net migration	Annual Net migration	Net annual migration rate
Bumthang	16,116	1,531	2,128	597	119	0.7
Chhukha	74,387	3,618	10,295	6,677	1,335	1.8
Dagana	22,670	2,605	2,475	(130)	(26)	(0.1)
Gasa	3,116	192	294	102	20	0.7
Haa	11,648	1,700	1,390	(310)	(62)	(0.5)
Lhuentse	15,395	2,924	792	(2,132)	(426)	(2.8)
Monggar	37,069	4,944	2,571	(2,373)	(475)	(1.3)
Paro	36,433	2,827	5,482	2,655	531	1.5
Pemagatshel	22,287	3,031	2,307	(724)	(145)	(0.6)
Punakha	23,462	2,084	3,881	1,797	359	1.5
Samdrupjongkhar	33,889	5,868	3,454	(2,414)	(483)	(1.4)
Samtse	60,100	5,726	4,830	(896)	(179)	(0.3)
Sarpang	37,101	5,597	6,149	552	110	0.3
Thimphu	92,929	7,200	17,839	10,639	2,128	2.3
Trashigang	48,783	10,073	2,952	(7,121)	(1,424)	(2.9)
Trashiyangtse	17,740	3,472	808	(2,664)	(533)	(3.0)
Trongsa	13,419	1,945	1,634	(311)	(62)	(0.5)
Tsirang	18,667	3,872	2,110	(1,762)	(352)	(1.9)
Wangdue	31,135	3,081	3,769	688	138	0.4
Zhemgang	18,636	4,431	1,561	(2,870)	(574)	(3.1)

Table 4.3 indicates that one year prior to the 2005 Census, Dzongkhags like Zhemgang lost 10 percent of its base population, followed by Trashigang and Lhuentse at about 9 percent Sarpang and Haa gained less than 1 percent of its base population.

**Table 4.3: Life time migration between Dzongkhags, less than one year, 2005**

Dzongkhag	Population	Out- migration	In-migration	Net-migration	
				No. of persons	Proportion to population
Bumthang	16,116	1,016	1,531	515	3.2
Chhukha	74,387	2,571	5,906	3,335	4.5
Dagana	22,670	1,774	1,412	(362)	(1.6)
Gasa	3,116	133	305	172	5.5
Haa	11,648	1,188	1,271	83	0.7
Lhuentse	15,395	1,986	650	(1,336)	(8.7)
Monggar	37,069	3,582	1,481	(2,101)	(5.7)
Paro	36,433	1,850	4,588	2,738	7.5
Pemagatshel	22,287	2,029	1,567	(462)	(2.1)
Punakha	23,462	1,522	2,899	1,377	5.9
Samdrupjongkhar	33,889	4,138	2,234	(1,904)	(5.6)
Samtse	60,100	4,084	2,453	(1,631)	(2.7)
Sarpang	37,101	3,485	3,651	166	0.4
Thimphu	92,929	4,647	11,958	7,311	7.9
Trashigang	48,783	6,544	2,186	(4,358)	(8.9)
Trashiyangtse	17,740	2,166	1,019	(1,147)	(6.5)
Trongsa	13,419	1,358	1,056	(302)	(2.3)
Tsirang	18,667	2,188	1,191	(997)	(5.3)
Wangdue	31,135	2,220	2,948	728	2.3
Zhemgang	18,636	2,762	937	(1,825)	(9.8)

Note: Figures in the parenthesis indicate negative migration

## 4.2 Place of birth

Table 4.4 shows the proportion of population that were born and found in their birth place over the years. Gasa had the largest proportion (81%) of their persons counted in their own Dzongkhag, while Tsirang had the least with only 54 percent.

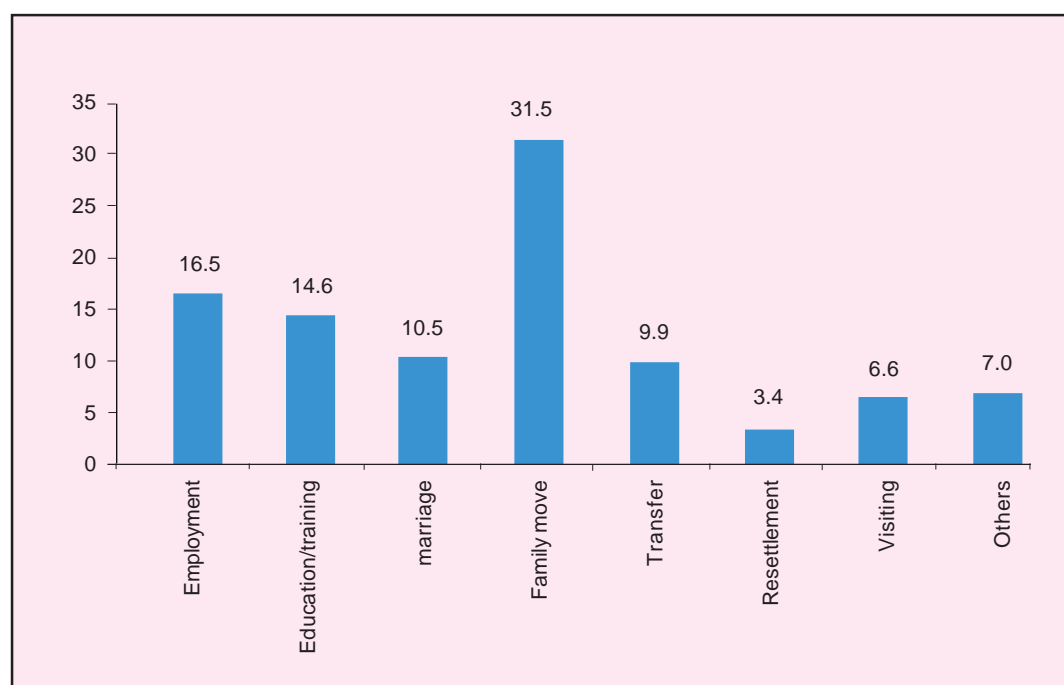
**Table 4.4: Proportion of population (of their birth place) by Dzongkhag, 2005**

Dzongkhag	Population by Place of birth	Enumerated at their place of birth	
		No. of persons	Proportion
Bumthang	14,117	9,770	69.2
Chhukha	43,997	34,526	78.5
Dagana	22,331	15,060	67.4
Gasa	2,899	2,349	81.0
Haa	10,754	6,270	58.3
Lhuentse	21,261	13,223	62.2
Monggar	43,458	30,587	70.4
Paro	26,077	18,695	71.7
Pemagatshel	19,776	11,811	59.7
Punakha	16,464	11,121	67.5
Samdrupjongkhar	41,149	23,612	57.4

Samtse	61,541	46,205	75.1
Sarpang	33,435	18,364	54.9
Thimphu	48,686	30,898	63.5
Trashigang	66,422	40,418	60.9
Trashiyangtse	23,821	15,312	64.3
Trongsa	14,787	9,245	62.5
Tsirang	24,451	13,143	53.8
Wangdue	28,456	20,393	71.7
Zhemgang	26,680	14,652	54.9

### 4.3 Reasons for migration

Figure 4.2 shows that about one-third migrated because of family move (eg. due to job transfer, business, resettlement, etc..) which ranged from 25 percent in Gasa to 42 percent in Sarpang and Samdrupjongkhar.



**Figure 4.2: Reasons of migration, Bhutan, 2005**

One out of six migrated looking for employment, with Thimphu recording the highest of such migrants at 27 percent while Dagana barely recorded 4 percent. Education/training attracted at least one out of seven in-migrants with the proportion higher in Trashiyangtse (29%) and Trashigang (28%) while Samtse had the least with 6 percent. One in 10 migrated because of marriage with the most common in Tsirang (23%) and Samtse (21%). About one out of 10 people also moved because of transfer of work place with the proportion being higher in Gasa (20%) as shown in Table 4.5.

**Table 4.5: Percent distribution of in-migrants by reasons of migration, Dzongkhag, 2005**

Dzongkhag	Employment	Education/Training	Marriage	Family move place	Transfer of work	Resettlement	Visiting	Others
Bumthang	16.0	20.0	6.2	29.5	12.8	1.6	6.2	7.8
Chhukha	27.9	9.7	9.2	30.4	9.8	1.1	7.0	5.0
Dagana	3.5	10.1	16.3	38.2	7.7	10.9	5.9	7.4
Gasa	14.5	14.6	5.7	25.3	19.9	0.5	7.6	11.8
Haa	20.9	13.7	5.8	33.9	15.2	0.5	5.1	5.0
Lhuentse	9.0	24.5	13.1	27.5	9.9	1.9	5.7	8.2
Monggar	11.7	22.9	12.5	27.5	8.7	2.1	6.1	8.3
Paro	17.3	17.2	8.5	31.1	10.3	2.5	7.0	6.1
Pemagatshel	9.5	24.5	14.1	29.0	9.5	1.9	5.2	6.2
Punakha	9.3	23.4	9.7	29.8	10.6	4.3	6.1	7.0
Samdrupjongkhar	7.2	7.2	7.3	41.7	15.5	8.4	6.3	6.3
Samtse	11.7	6.3	21.0	32.9	9.7	5.2	6.6	6.5
Sarpang	7.5	8.5	10.1	42.4	10.0	9.0	5.9	6.7
Thimphu	27.1	12.9	7.4	27.4	8.4	1.3	6.5	9.1
Trashigang	8.4	27.8	10.9	27.5	8.3	2.3	6.8	8.0
Trashiyangtse	7.3	29.1	10.5	26.1	8.5	1.7	8.1	8.9
Trongsa	13.1	19.6	6.4	33.7	13.5	1.9	7.1	4.9
Tsirang	5.4	7.1	22.5	38.0	5.8	8.8	7.1	5.3
Wangdue	12.8	20.5	9.3	28.3	11.5	2.4	8.0	7.2
Zhemgang	8.5	25.0	9.7	31.1	8.3	3.2	6.8	7.4
<b>Bhutan</b>	<b>16.5</b>	<b>14.6</b>	<b>10.5</b>	<b>31.5</b>	<b>9.9</b>	<b>3.4</b>	<b>6.6</b>	<b>7.0</b>

## Chapter 5: Education

Education is one of the most important well being indicators. The PHCB 2005 collected information on education for all persons 6 years and above. A person was considered literate if s/he was able to read and write, with understanding, a simple statement. For those learners in school/institute which could be graded, the highest grade completed was recorded while for those who attended traditional/non-formal, the number of years attended was recorded. This chapter provides information on education covering literacy, educational status and attainment and gross and net enrolment rates.

### 5.1 Literacy

Literacy rate is an important indicator to analyze the improvements in education. According to Table 5.1, the overall literacy rate of Bhutan was 59.5 percent. Three quarters of the population in urban areas and half the population in rural areas were literate. In urban areas, five out of six males and six out of nine females were literate while in rural areas, three out of five males were literate but three out of five females were illiterate. Both males and females of all age groups in urban areas were more literate than their counterparts in rural areas.

Figure 5.1 shows that the 10-14 age group had the highest number of literate persons. The literacy rates decreased with increasing age cohorts and reached barely 32 percent (rural: 26 % and urban: 56 %) in the 50-54 age group.

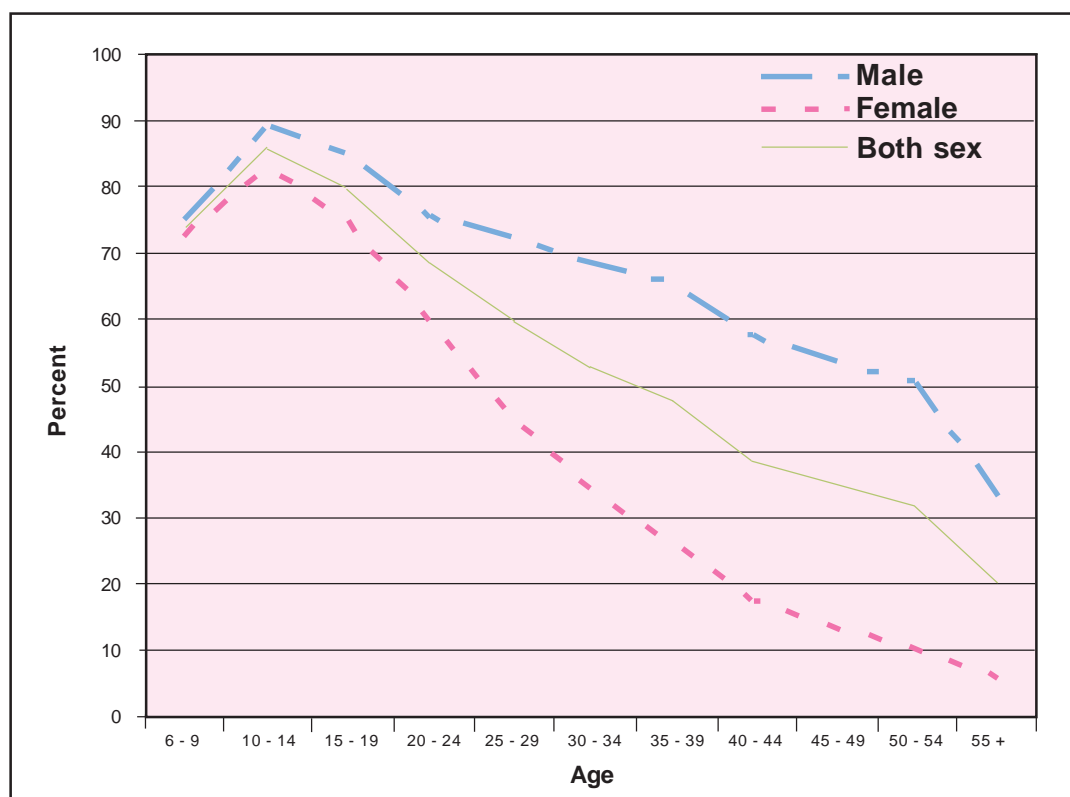


Figure 5.1: Literacy by age, Bhutan, 2005



**Table 5.1: Literacy rate by area, sex and age-group, Bhutan, 2005**

Age-group	Urban			Rural			Bhutan		
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex
6 - 9	90.4	89.6	90.0	69.2	66.2	67.7	74.9	72.7	73.8
10 - 14	96.3	89.9	93.0	85.8	79.6	82.8	88.8	82.7	85.8
15 - 19	93.3	84.8	89.0	80.3	68.9	74.6	85.0	74.8	79.9
20 - 24	82.1	74.4	78.9	70.6	49.6	61.4	75.4	59.4	68.5
25 - 29	80.3	62.9	72.6	66.9	35.7	52.5	72.1	45.7	60.1
30 - 34	79.7	53.6	68.3	61.8	24.1	44.1	68.4	34.1	52.7
35 - 39	79.7	47.6	66.3	57.6	16.8	38.3	65.6	26.4	47.7
40 - 44	75.7	37.3	60.3	48.9	10.9	30.3	57.4	17.4	38.8
45 - 49	74.3	31.2	57.0	45.7	8.6	27.9	53.4	13.3	34.9
50 - 54	74.4	26.9	56.1	43.3	6.6	25.5	50.6	10.1	31.7
55 +	53.0	14.1	34.0	29.8	4.3	17.6	33.2	5.8	20.1
<b>All groups</b>	<b>83.1</b>	<b>67.5</b>	<b>75.9</b>	<b>62.6</b>	<b>40.6</b>	<b>52.1</b>	<b>69.1</b>	<b>48.7</b>	<b>59.5</b>

Table 5.2 shows that the literacy rates in Thimphu, Bumthang, Chhukha, Ha, Paro and Punakha were above the national literacy rate. Dzongkhag wise, only Gasa had half of its population illiterate. At least three out of five females in Gasa, Dagana and Samtse were illiterate. The urban population was more literate than rural population and males were more literate than females in all the Dzongkhags. Punakha had the highest literate proportion (86%) in urban areas, while Thimphu had the highest proportion (65%) of literate population in rural areas.

**Table 5.2: Literacy rate by area and sex, Dzongkhag, 2005**

Dzongkhag	Urban			Rural			Bhutan		
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex
Bumthang	80.0	63.2	72.8	73.1	53.1	63.9	75.0	55.6	66.2
Chhukha	85.9	70.3	78.7	59.9	36.4	50.7	70.6	52.8	63.1
Dagana	84.0	72.5	79.0	57.6	35.7	46.6	61.3	39.8	50.7
Gasa	86.2	69.6	78.7	58.4	23.6	42.0	62.1	29.4	46.8
Haa	86.7	74.2	80.9	67.5	44.8	57.2	71.7	51.3	62.4
Lhuentse	82.4	68.2	76.4	63.4	42.1	52.6	65.6	44.3	55.0
Monggar	84.1	71.9	78.9	53.5	33.2	43.1	60.3	39.9	50.2
Paro	82.9	67.2	76.3	72.6	53.8	63.7	73.5	54.7	64.7
Pemagatshel	81.2	66.6	75.2	65.3	40.9	52.6	68.1	44.0	56.0
Punakha	89.9	81.6	86.0	68.4	49.7	59.3	70.6	52.9	62.0
Samdrupjongkhar	78.4	58.6	69.5	60.9	35.9	48.5	66.2	42.0	54.5
Samtse	85.2	66.4	75.9	56.3	32.5	45.0	61.0	38.4	50.2
Sarpang	80.0	63.1	72.1	64.0	40.4	52.7	69.2	47.5	58.9
Thimphu	82.3	67.0	75.2	72.9	54.0	65.2	80.7	65.3	73.7
Trashigang	84.6	72.6	79.3	62.6	41.9	52.3	66.0	45.9	56.2
Trashiyangtse	84.7	68.8	77.3	59.7	41.2	50.3	64.2	45.7	55.0
Trongsa	85.7	67.7	77.5	64.1	46.3	55.3	68.7	50.3	59.7
Tsirang	86.0	63.5	74.5	65.8	39.6	52.9	67.5	41.7	54.8
Wangdue	80.1	62.3	72.4	60.1	37.6	48.9	65.4	42.9	54.6
Zhemgang	85.8	72.1	79.4	60.8	40.8	50.9	65.7	46.4	56.3
<b>Bhutan</b>	<b>83.1</b>	<b>67.5</b>	<b>75.9</b>	<b>62.6</b>	<b>40.6</b>	<b>52.1</b>	<b>69.1</b>	<b>48.7</b>	<b>59.5</b>

Table 5.3 shows that youth literacy rate in Bhutan was higher (74%) than the adult literacy rate (53%). In all Dzongkhags, both males and females in the youth population were more literate than the adult population. Further, males were more literate than their female counterparts in both the categories but discrepancy is observed to be more in the adult category.

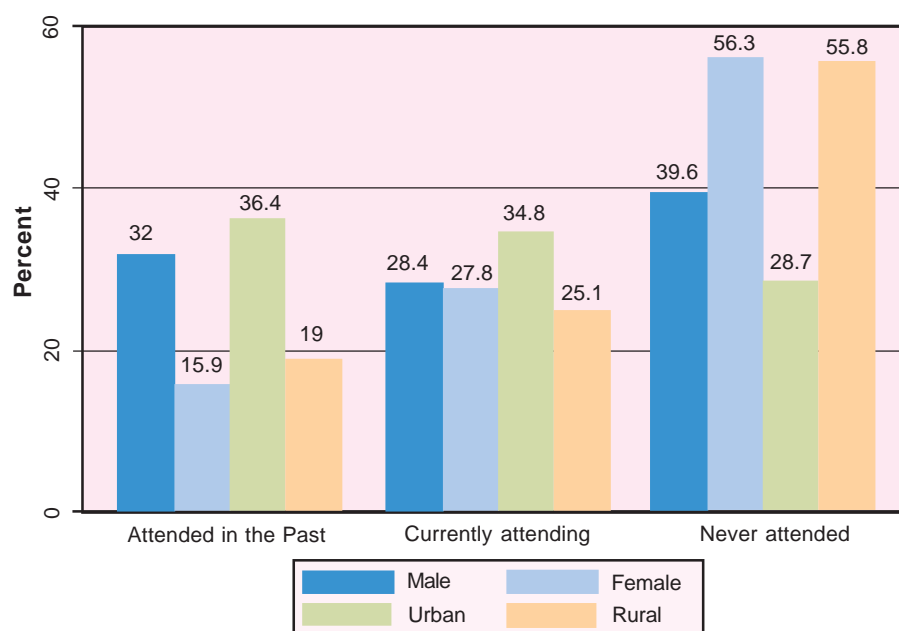
Youth literacy rates in Gasa, Samtse, Dagana, Sarpang, Samdrupjongkhar, Tsirang, Monggar, Chukha and Wangdue were below the national average of 74 percent. Adult literacy rates in Bumthang, Chukha, Ha, Paro, and Thimphu were above the national average of 53 percent.

**Table 5.3: Youth and adult literacy rates by sex, Dzongkhag, 2005**

Dzongkhag	15-24 yrs			15 years & above		
	Male	Female	Both sex	Male	Female	Both sex
Bumthang	85.6	82.7	84.5	70.3	43.7	58.6
Chhukha	75.6	65.1	71.0	68.5	44.9	59.0
Dagana	71.8	56.4	63.8	58.2	29.8	44.0
Gasa	68.5	41.4	56.9	56.9	18.3	39.2
Haa	80.7	75.1	78.2	66.8	39.4	54.5
Lhuentse	82.3	68.8	75.8	58.4	31.7	45.2
Monggar	77.6	63.2	70.6	54.0	29.0	41.5
Paro	84.2	78.8	81.8	69.4	44.7	58.1
Pemagatshel	86.9	74.8	81.0	61.0	31.3	46.0
Punakha	87.6	80.7	84.4	65.7	41.9	54.3
Samdrupjongkhar	78.8	57.0	68.1	61.2	29.9	46.3
Samtse	66.7	48.6	57.7	58.0	29.7	44.5
Sarpang	74.3	60.0	67.5	66.3	37.4	52.8
Thimphu	85.5	78.4	82.3	78.0	58.5	69.5
Trashigang	83.8	71.2	77.9	59.5	34.2	47.2
Trashiyangtse	83.9	71.8	78.0	55.9	31.9	43.9
Trongsa	84.7	78.7	81.9	62.4	37.6	50.4
Tsirang	79.1	61.3	70.4	65.0	32.8	49.3
Wangdue	79.7	65.3	73.2	59.1	30.0	45.2
Zhemgang	83.7	70.8	77.6	59.1	34.7	47.2
<b>Bhutan</b>	<b>80.0</b>	<b>68.0</b>	<b>74.4</b>	<b>65.0</b>	<b>38.7</b>	<b>52.8</b>

## 5.2 Educational status

The educational status of the population six years and above is presented in figure 5.2. They are classified into currently attending, attended in the past, and never attended school/institute or formal education. The rural population (56%) who never attended school/institute was double than the urban population (29%). Between sexes, three out of seven females and three out of five men had attended or were currently attending a school/institute. In urban areas, about one out of five males and about three out of five females and in rural areas, about one out of two males and two out of three females never attended school/institute.



**Figure 5.2: Educational status by area and sex, Bhutan, 2005**

Table 5.4 shows that from the population of 558,552 persons (six years and above), about half of them (53%) were either attending or attended school/institute in the past. The fact that almost half of the population of 6 years and above (47%) never attended school/institute is an expression that education participation was a recent phenomenon. Three out of five persons in Gasa and only three out of nine persons in Thimphu had no formal education. The proportion of population attending formal education ranged from 19 percent in Gasa to 33 percent in Punakha. Trashiyangtse had 13 percent of the population who attended formal education in the past while Thimphu had 38 percent.

**Table 5.4: Percent distribution of population six years and above by educational status, Dzongkhag, 2005**

Dzongkhag	Attended in the past	Currently attending	Never attended	Total (numbers)
Bumthang	24.7	30.6	44.7	14,434
Chhukha	34	25.2	40.8	65,905
Dagana	18.2	23.9	57.9	19,529
Gasa	21.5	18.8	59.8	2,730
Haa	25	31.2	43.9	10,406
Lhuentse	14.8	29.7	55.5	13,397
Monggar	15.5	27.9	56.7	32,411
Paro	28.3	31.8	40	32,694

Pemagatshel	15.2	32.7	52.2	19,716
Punakha	22.5	33	44.6	20,744
Samdrupjongkhar	19.3	27.2	53.5	29,329
Samtse	21.1	21.3	57.6	52,732
Sarpang	27	25.8	47.2	32,382
Thimphu	38.1	30.2	31.7	82,162
Trashigang	14.3	32	53.8	42,845
Trashiyangtse	12.5	32	55.6	15,346
Trongsa	21.8	29.7	48.5	11,770
Tsirang	23.5	24.7	51.7	16,293
Wangdue	21.3	27.1	51.7	27,302
Zhemgang	16.2	32.1	51.8	16,395
<b>Bhutan</b>	<b>24.4</b>	<b>28.2</b>	<b>47.4</b>	<b>558,522</b>

Table 5.5 presents the educational attainment of persons six years and above categorised as: ‘No grades’ for those who did not complete grade I or those who attended non-formal education; ‘Primary’ for those who completed grade VI; ‘Secondary’ for grade XII; ‘diploma’ for diploma level; ‘undergraduates’ for those who did not complete degree and ‘Degree+’ for those who had a bachelors degree and above. Among those who attended school/institute, about half of the population had primary education, about one-third with secondary education but only one in 16 persons had higher level of education. Dzongkhag wise, Gasa had the highest proportion (61%) with primary education while Thimphu had bigger proportion with both secondary (41%) and higher education (11%). In Bhutan, about one in seven persons had attended non-formal education or had not completed grade 1. One in four persons in Lhuentse did not complete grade 1 or had no formal education.

**Table 5.5: Percent distribution of population six years and above by educational attainment, Dzongkhag, 2005**

Dzongkhag	No grade	Primary	Secondary	Diploma	Undergraduate	Degree+	Total (Numbers)
Bumthang	14.5	52.0	29.1	1.5	0.6	2.3	7,981
Chhukha	9.6	43.8	38.3	1.9	1.6	4.8	39,033
Dagana	22.2	57.1	17.8	1.4	0.3	1.1	8,228
Gasa	17.1	60.6	16.2	3.6	0.8	1.7	1,098
Haa	14.0	50.7	29.7	1.4	1.3	2.9	5,842
Lhuentse	24.9	51.9	20.9	1.0	0.4	1.0	5,968
Monggar	20.1	50.7	26.0	1.4	0.5	1.4	14,043
Paro	11.4	43.9	37.3	1.2	3.2	3.1	19,625
Pemagatshel	17.9	52.8	27.0	0.8	0.5	1.1	9,434
Punakha	15.3	49.1	32.5	1.1	0.3	1.7	11,494
Samdrupjongkhar	20.4	55.2	21.2	0.9	0.6	1.7	13,636
Samtse	17.2	56.2	21.7	1.0	1.5	2.3	22,358
Sarpang	15.2	55.6	26.0	1.1	0.5	1.6	17,088
Thimphu	9.2	39.4	40.6	2.3	1.7	6.9	56,106
Trashigang	17.6	49.7	25.2	1.4	4.5	1.6	19,805
Trashiyangtse	21.1	53.1	23.2	1.3	0.4	0.9	6,819
Trongsa	19.0	53.9	23.6	1.4	0.4	1.7	6,065
Tsirang	14.6	59.7	22.9	1.0	0.5	1.2	7,863
Wangdue	16.3	52.9	26.7	1.8	0.4	1.8	13,199
Zhemgang	21.9	50.5	24.7	1.5	0.2	1.2	7,910
<b>Bhutan</b>	<b>14.7</b>	<b>48.8</b>	<b>30.4</b>	<b>1.5</b>	<b>1.4</b>	<b>3.2</b>	<b>293,595</b>

### 5.3 Gross enrolment rate (GER)

The GER is the proportion of children in the specified level of education regardless of age by the total number of children between the ages specified for particular level of education. The PHCB 2005 collected information on education only for persons six years and above, and thus children below six years who would have been in school/institute were excluded affecting the gross primary enrolment rate. The gross primary enrolment rate was 90 percent with the rate higher in urban (98%) than in rural areas (87%). The GER decreased as the education level increased with the rate for Lower Secondary at 67 percent, Middle Secondary at 50 percent and Higher Secondary at 34 percent. GER for males were higher than females in both urban and rural areas as well as in both primary and all secondary levels (Table 5.6).

**Table 5.6: Gross enrolment ratio by sex, area and level of education, Bhutan, 2005**

Level of education	Urban			Rural			Bhutan		
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex
Primary	99.7	96.1	97.8	89.4	84.8	87.1	92.1	88.0	90.1
Lower Secondary	102.1	98.8	100.4	54.7	50.7	52.7	68.8	66.0	67.4
Middle Secondary	91.1	78.8	84.5	35.2	29.8	32.5	53.1	46.8	49.9
Higher Secondary	70.8	53.1	62.0	19.7	12.7	16.2	39.3	28.1	33.7
<b>Bhutan</b>	<b>92.9</b>	<b>85.3</b>	<b>89.0</b>	<b>66.1</b>	<b>60.8</b>	<b>63.5</b>	<b>74.1</b>	<b>68.5</b>	<b>71.3</b>

### 5.4 Net enrolment rate (NER)

The NER is the proportion of children in the specified level of education by the total number of children between the ages specified for particular level of education. Table 5.7 shows that the NER at Primary level was 72 percent with urban rate higher (83%) than rural areas (67%). Similar to gross enrolment, NER decreased with rise in education level with Lower Secondary at 22 percent, Middle Secondary at 16 percent and Higher Secondary at 12 percent. The strikingly lower rate at all secondary levels is due to exclusion of under-age children who were already attending at specific higher secondary levels. In both urban and rural areas, female enrolment rates were equivalent or slightly higher than male enrolment rate except at the Primary level.

**Table 5.7: Net enrolment rate by sex, area and level of education, Bhutan, 2005**

Level of education	Urban			Rural			Bhutan		
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex
Primary	83.7	82.2	82.9	68.1	66.1	67.1	72.3	70.6	71.5
Lower Secondary	37.1	37.9	37.5	14.3	14.8	14.6	21.1	22.2	21.6
Middle Secondary	28.0	29.5	28.8	9.8	9.3	9.5	15.6	16.3	16.0
Higher Secondary	21.8	22.9	22.3	5.1	5.1	5.1	11.5	11.9	11.7
<b>Bhutan</b>	<b>54.7</b>	<b>54.3</b>	<b>54.5</b>	<b>42.1</b>	<b>40.7</b>	<b>41.4</b>	<b>45.8</b>	<b>44.9</b>	<b>45.4</b>

Table 5.8 shows the Dzongkhag wise gross and net enrolment rates. Bumthang, Pemagatshel, Ha, Trashiyangtse and Trongsa had more than 100 percent gross enrolment rate at the Primary level. Haa and Punakha had the highest gross enrolment rate at the Lower Secondary (85%) and Thimphu at the Higher Secondary (74%) levels. Haa (Primary & Middle Secondary) Punakha (Lower Secondary) and Thimphu (Higher Secondary) had the highest gross enrolment rate among the female population.

Net primary enrolment rate was highest in Bumthang with 84 percent, while Dagana had the lowest with 57 percent. Thimphu and Haa had the highest net enrolment rate at Lower Secondary level with 33 percent, Haa with highest rate (32%) at Middle Secondary, and Punakha at Higher Secondary level with 27 percent. Bumthang (Primary), Haa (Lower Secondary & Middle Secondary) and Paro (Higher Secondary) had the highest net enrolment rates among females.

**Table 5.8: Gross and net enrolment rates by sex, level of education, Dzongkhag, 2005**

Dzongkhag/ Level of education	Gross enrolment rate			Net enrolment rate		
	Male	Female	Both sex	Male	Female	Both sex
<b>Bumthang</b>	<b>80.7</b>	<b>84.2</b>	<b>82.3</b>	<b>47.9</b>	<b>57.7</b>	<b>52.5</b>
Primary	104.6	105.2	104.9	81.4	85.6	83.5
Lower Secondary	72.2	81.7	76.8	24.8	26.8	25.8
Middle Secondary	44.6	63.1	52.6	12.2	32.9	21.2
Higher Secondary	58.5	36.0	48.2	10.9	24.6	17.2
<b>Chukha</b>	<b>74.7</b>	<b>66.8</b>	<b>70.7</b>	<b>46.3</b>	<b>45.7</b>	<b>46.0</b>
Primary	86.6	82.2	84.4	69.5	67.6	68.5
Lower Secondary	74.3	64.3	69.2	26.0	24.4	25.2
Middle Secondary	63.8	50.3	56.6	18.9	22.2	20.6
Higher Secondary	44.8	34.0	39.4	12.8	17.5	15.1
<b>Dagana</b>	<b>57.6</b>	<b>53.3</b>	<b>55.5</b>	<b>35.3</b>	<b>35.8</b>	<b>35.5</b>
Primary	79.0	76.7	77.9	57.4	56.7	57.1
Lower Secondary	46.7	45.9	46.3	10.3	11.3	10.8
Middle Secondary	34.2	29.6	31.7	6.7	14.4	10.9
Higher Secondary	3.7	0.7	2.2	1.4	7.8	4.7
<b>Gasa</b>	<b>61.3</b>	<b>49.5</b>	<b>55.4</b>	<b>46.8</b>	<b>38.2</b>	<b>42.5</b>
Primary	89.1	68.5	78.9	73.9	57.5	65.8
Lower Secondary	59.3	61.9	60.7	18.6	17.5	18.0
Middle Secondary	0.0	3.0	1.5	0.0	13.4	6.9
Higher Secondary	1.9	0.0	1.0	1.9	0.0	1.0
<b>Haa</b>	<b>82.5</b>	<b>83.8</b>	<b>83.2</b>	<b>50.7</b>	<b>55.9</b>	<b>53.2</b>
Primary	98.7	106.8	102.6	78.1	84.2	81.1
Lower Secondary	79.1	90.5	84.7	32.2	33.2	32.7
Middle Secondary	83.4	72.0	77.1	26.9	35.3	31.5
Higher Secondary	38.4	24.5	31.7	10.7	21.2	15.8
<b>Lhuentse</b>	<b>69.8</b>	<b>63.5</b>	<b>66.7</b>	<b>42.7</b>	<b>45.9</b>	<b>44.3</b>
Primary	93.7	87.8	90.6	73.7	71.2	72.4
Lower Secondary	77.7	61.5	69.8	17.9	18.9	18.4
Middle Secondary	47.8	36.6	42.4	10.3	15.7	12.9
Higher Secondary	8.1	2.5	5.4	1.8	10.2	5.8
<b>Monggar</b>	<b>70.4</b>	<b>61.9</b>	<b>66.2</b>	<b>41.6</b>	<b>41.6</b>	<b>41.6</b>
Primary	85.8	81.4	83.7	65.9	64.3	65.1
Lower Secondary	70.3	67.9	69.2	17.7	19.2	18.4
Middle Secondary	49.1	42.8	45.9	12.5	18.6	15.6
Higher Secondary	39.1	13.0	25.8	11.6	13.2	12.4
<b>Paro</b>	<b>80.1</b>	<b>78.9</b>	<b>79.5</b>	<b>50.9</b>	<b>52.9</b>	<b>51.9</b>
Primary	95.1	93.6	94.3	77.9	77.8	77.9
Lower Secondary	72.2	82.4	77.3	26.5	26.2	26.4
Middle Secondary	63.5	64.9	64.2	22.3	29.6	26.2
Higher Secondary	57.7	46.0	51.7	18.7	26.6	22.8
<b>Pemagatshel</b>	<b>88.8</b>	<b>71.5</b>	<b>80.2</b>	<b>48.6</b>	<b>48.6</b>	<b>48.6</b>
Primary	110.8	97.1	103.9	83.1	76.3	79.6
Lower Secondary	84.6	65.4	75.2	21.3	22.3	21.8
Middle Secondary	90.8	56.9	73.8	16.9	22.8	19.9
Higher Secondary	31.7	11.8	22.5	9.3	13.6	11.3

<b>Punakha</b>	<b>82.5</b>	<b>83.2</b>	<b>82.9</b>	<b>50.3</b>	<b>52.8</b>	<b>51.6</b>
Primary	91.6	97.8	94.7	76.9	77.9	77.4
Lower Secondary	78.8	91.2	85.4	23.2	20.7	21.9
Middle Secondary	72.1	65.8	68.8	25.9	32.9	29.5
Higher Secondary	70.0	54.2	62.1	21.1	32.6	26.9
<b>Samdrupjongkhar</b>	<b>68.5</b>	<b>61.7</b>	<b>65.1</b>	<b>42.5</b>	<b>43.1</b>	<b>42.8</b>
Primary	97.7	89.3	93.5	70.3	67.1	68.7
Lower Secondary	66.5	52.0	59.4	13.6	14.2	13.9
Middle Secondary	15.2	17.0	16.1	5.4	16.3	10.9
Higher Secondary	7.3	5.6	6.4	2.3	5.3	3.8
<b>Samtse</b>	<b>57.0</b>	<b>49.8</b>	<b>53.4</b>	<b>36.9</b>	<b>35.8</b>	<b>36.4</b>
Primary	80.7	72.4	76.7	60.5	57.8	59.2
Lower Secondary	44.7	40.6	42.7	11.3	11.8	11.6
Middle Secondary	23.2	20.9	22.0	6.8	14.5	10.8
Higher Secondary	10.6	9.1	9.8	3.3	5.7	4.5
<b>Sarpang</b>	<b>68.7</b>	<b>64.1</b>	<b>66.4</b>	<b>43.1</b>	<b>43.9</b>	<b>43.5</b>
Primary	92.2	86.9	89.6	70.6	68.4	69.5
Lower Secondary	61.4	59.6	60.5	17.1	16.7	16.9
Middle Secondary	52.2	47.1	49.6	12.1	18.7	15.6
Higher Secondary	11.4	7.4	9.4	3.7	13.1	8.4
<b>Thimphu</b>	<b>85.0</b>	<b>80.8</b>	<b>82.8</b>	<b>55.3</b>	<b>53.1</b>	<b>54.2</b>
Primary	95.1	90.2	92.6	80.8	79.1	79.9
Lower Secondary	79.6	80.9	80.3	33.5	31.6	32.6
Middle Secondary	64.3	62.1	63.2	25.5	27.5	26.6
Higher Secondary	78.0	71.2	74.4	24.9	23.1	24.0
<b>Trashigang</b>	<b>75.3</b>	<b>68.0</b>	<b>71.8</b>	<b>45.2</b>	<b>47.2</b>	<b>46.2</b>
Primary	92.5	89.0	90.8	73.7	70.2	72.0
Lower Secondary	77.4	66.0	71.8	20.7	21.7	21.2
Middle Secondary	63.3	48.0	55.7	16.1	23.9	20.0
Higher Secondary	31.3	19.1	25.7	8.4	20.1	13.8
<b>Trashiyangtse</b>	<b>82.7</b>	<b>73.9</b>	<b>78.3</b>	<b>50.5</b>	<b>51.5</b>	<b>51.0</b>
Primary	102.9	100.6	101.7	80.4	79.7	80.1
Lower Secondary	68.3	68.4	68.4	19.5	21.2	20.3
Middle Secondary	58.2	41.2	49.8	19.2	18.4	18.8
Higher Secondary	52.5	18.4	35.0	10.8	16.7	13.8
<b>Trongsa</b>	<b>74.3</b>	<b>76.5</b>	<b>75.4</b>	<b>48.6</b>	<b>53.6</b>	<b>51.1</b>
Primary	97.7	104.3	101.0	77.9	80.7	79.3
Lower Secondary	70.3	62.9	66.6	17.4	16.8	17.1
Middle Secondary	48.7	56.6	52.7	13.7	29.4	21.6
Higher Secondary	18.8	9.9	14.4	8.3	19.1	13.6
<b>Tsirang</b>	<b>72.1</b>	<b>60.2</b>	<b>66.1</b>	<b>41.5</b>	<b>39.2</b>	<b>40.3</b>
Primary	91.9	81.1	86.5	67.9	61.6	64.7
Lower Secondary	61.1	53.2	57.2	13.9	14.4	14.2
Middle Secondary	46.5	41.9	44.2	7.6	16.1	11.9
Higher Secondary	38.7	14.8	26.1	10.8	10.5	10.7
<b>Wangdue</b>	<b>70.6</b>	<b>70.9</b>	<b>70.7</b>	<b>47.3</b>	<b>50.8</b>	<b>49.0</b>
Primary	91.3	91.6	91.5	74.6	73.6	74.1
Lower Secondary	65.0	68.4	66.7	22.9	21.9	22.4
Middle Secondary	46.5	48.0	47.2	15.4	32.0	23.6
Higher Secondary	28.4	18.3	23.6	8.4	15.9	12.0
<b>Zhemgang</b>	<b>80.5</b>	<b>68.1</b>	<b>74.4</b>	<b>44.2</b>	<b>46.2</b>	<b>45.2</b>
Primary	103.4	94.6	99.1	72.8	71.5	72.2
Lower Secondary	63.4	62.0	62.7	16.1	17.3	16.7
Middle Secondary	52.2	38.9	45.4	13.2	22.3	17.9
Higher Secondary	53.1	19.5	36.7	12.3	19.3	15.7



## Chapter 6: Labour and Employment

The total labour force consists of all persons 15 years and above. Economically active population consists of both employed and unemployed persons. A person who worked for cash or kind at least one hour during the seven days prior to the Census was considered employed. Conversely, a person who did not work during the seven days prior to interview was considered unemployed. All others who did not work but were students, disabled and ill persons and who were engaged in household duties were treated as part of the economically inactive population. Some of the information highlighted in this chapter includes unemployment and labour force participation rates, sector of employment and dependency ratios.

### 6.1 Economic activity

Among the economically active population of 256,895 persons, 3.1 percent were unemployed. The unemployment rate in urban areas (4.7 %) was double than the rural areas (2.4%). The female population had higher unemployment rate (3.3%) than their male counterparts (2.9%).

The labour force participation rate, which is the ratio of the economically active to the total population, was 60.4 percent (Table 6.1). The male participation rate (72%) was higher than females (48%). Labour participation rate was also found to be also higher in the rural areas (63%) than in urban areas (54%). The female participation rate in urban areas was 34 percent indicating that two-thirds of the female population in urban areas was among the economically inactive population.

**Table 6.1: Population 15 years and above by activity status, participation rate and unemployment rate by sex and area, Bhutan, 2005**

Area/Sex	Activity status				Labour force participation rate	Unemployment rate
	Employed	Unemployed	Inactive	Total		
Urban	70,132	3,450	61,740	135,322	54.4	4.7
Male	51,521	1,909	21,927	75,357	70.9	3.6
Female	18,611	1,541	39,813	59,965	33.6	7.6
Rural	178,898	4,415	106,388	289,701	63.3	2.4
Male	106,552	2,858	43,064	152,474	71.8	2.6
Female	72,346	1,557	63,324	137,227	53.9	2.1
<b>Bhutan</b>	<b>249,030</b>	<b>7,865</b>	<b>168,128</b>	<b>425,023</b>	<b>60.4</b>	<b>3.1</b>
Male	158,073	4,767	64,991	227,831	71.5	2.9
Female	90,957	3,098	103,137	197,192	47.7	3.3

Youth (15-24) had higher unemployment rate compared to other age groups, as shown in Table 6.2. Among the youth, the unemployment rate among the female population was with 7.2 percent. The youth unemployment accounts to 55 percent of the total unemployed population although it had a share of just 27 percent of the economically active population.

**Table 6.2: Population 15 years and above by age-sex specific activity status, labour force participation rates, and unemployment rates, Bhutan, 2005**

Age group	Activity status				Labour force participation rate	Unemployment rate
	Employed	Unemployed	Inactive	Total		
Male	158,073	4,767	64,991	227,831	71.5	2.9
15-24	39,428	2,306	36,024	77,758	53.7	5.5
25-34	47,055	1,150	6,389	54,594	88.3	2.4
35-44	32,663	577	3,906	37,146	89.5	1.7
45-54	22,102	468	4,104	26,674	84.6	2.1
55-64	11,145	197	4,986	16,328	69.5	1.7
65+	5,680	69	9,582	15,331	37.5	1.2
Female	90,957	3,098	103,137	197,192	47.7	3.3
15-24	25,836	2,002	40,214	68,052	40.9	7.2
25-34	24,499	571	20,500	45,570	55.0	2.3
35-44	17,692	251	13,540	31,483	57.0	1.4
45-54	12,874	178	9,983	23,035	56.7	1.4
55-64	6,786	76	7,776	14,638	46.9	1.1
65+	3,270	20	11,124	14,414	22.8	0.6
<b>Bhutan</b>	<b>249,030</b>	<b>7,865</b>	<b>168,128</b>	<b>425,023</b>	<b>60.4</b>	<b>3.1</b>
15-24	65,264	4,308	76,238	145,810	47.7	6.2
25-34	71,554	1,721	26,889	100,164	73.2	2.3
35-44	50,355	828	17,446	68,629	74.6	1.6
45-54	34,976	646	14,087	49,709	71.7	1.8
55-64	17,931	273	12,762	30,966	58.8	1.5
65+	8,950	89	20,706	29,745	30.4	1.0

Table 6.3 shows the Dzongkhag-wise labour force participation and unemployment rates. Gasa had the highest participation rate with 76 percent of the population part of the economically active, while Zhemgang had the lowest with only half the population as economically active. Between sex, Chukha had the highest male labour force participation rate (78%) and also the lowest female labour participation rate (37%). Unemployment ranged from 0.8 percent in Lhuentse to 5.5 percent in Thimphu. Thimphu also had the highest unemployed females (8.4%), while Zhemgang had the highest rate of unemployed males.

**Table 6.3: Labour force participation and unemployment rates by sex, Dzongkhag, 2005**

Dzongkhag	Labour force participation rate			Unemployment rate		
	Male	Female	Both sex	Male	Female	Both sex
Bumthang	65.7	42.4	55.4	2.4	1.9	2.2
Chhukha	77.7	36.8	61.3	2.9	6.0	3.7
Dagana	76.8	62.0	69.4	2.0	0.9	1.5
Gasa	82.2	67.8	75.6	1.3	0.6	1.0
Haa	75.4	46.7	62.5	2.2	2.8	2.4
Lhuentse	67.4	64.9	66.2	1.0	0.7	0.8
Monggar	64.6	50.9	57.8	2.9	2.0	2.5
Paro	66.5	41.8	55.2	3.4	3.6	3.5
Pemagatshel	61.8	48.0	54.8	3.5	2.6	3.1
Punakha	67.1	53.9	60.8	2.3	2.3	2.3
Samdrupjongkhar	72.8	44.6	59.4	4.7	4.1	4.5

Samtse	76.9	49.1	63.6	2.1	2.3	2.2
Sarpang	75.4	40.7	59.3	3.0	3.8	3.2
Thimphu	73.3	39.9	58.7	4.2	8.4	5.5
Trashigang	64.4	60.2	62.4	1.8	1.2	1.5
Trashiyangtse	64.0	51.3	57.6	1.9	1.2	1.6
Trongsa	68.5	53.0	61.0	1.9	2.1	2.0
Tsirang	76.0	59.3	67.9	1.9	1.1	1.6
Wangdue	73.8	54.8	64.8	2.3	2.3	2.3
Zhemgang	59.7	40.8	50.5	4.9	4.4	4.7
<b>Bhutan</b>	<b>71.5</b>	<b>47.7</b>	<b>60.4</b>	<b>2.9</b>	<b>3.3</b>	<b>3.1</b>

## 6.2 Youth employment

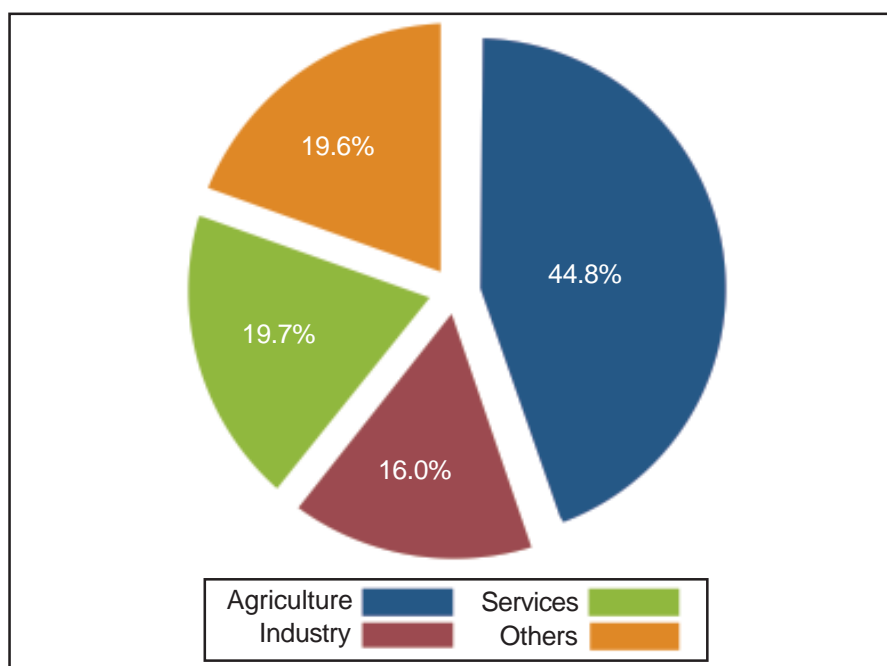
Table 6.4 shows youth unemployment disaggregated by area and sex for all the 20 Dzongkhags. Youth unemployment rate of 6.2 percent is double the overall unemployment rate of 3.1 percent. At least one in 10 urban youths and one in 25 rural youths were unemployment. The female unemployment rate was 7.2 percent and male was lower rate of 5.5 percent. Thimphu recorded the highest youth unemployment rate at 12.6 percent. Thimphu also had the highest male, female and urban youth unemployment rates at 9.4 percent, 18.5 and 13.3 percent respectively. Zhemgang had the highest youth unemployment rate in the rural area with 7.6 percent Lhuentse recorded the lowest youth unemployment rate of 1.3 percent indicating that 98.7 percent of 15-24 years in Lhuentse were employed.

**Table 6.4 Youth unemployment rate by areas and sex, Dzongkhag, 2005**

Dzongkhag	Area		Sex		Total
	Urban	Rural	Male	Female	
Bumthang	3.9	3.7	3.7	3.9	3.8
Chhukha	13.8	4.2	5.6	11.9	7.4
Dagana	3.3	2.5	3.6	1.5	2.6
Gasa	4.3	1.9	2.3	1.7	2.0
Haa	7.8	4.7	4.4	7.1	5.3
Lhuentse	4.4	1.0	1.8	0.8	1.3
Monggar	2.9	4.1	4.5	3.2	3.9
Paro	6.8	7.1	6.2	8.7	7.0
Pemagatshel	3.7	5.3	5.5	4.6	5.0
Punakha	7.1	3.9	3.1	5.5	4.2
Samdrupjongkhar	8.5	7.4	7.6	8.0	7.7
Samtse	8.5	3.6	4.0	4.3	4.1
Sarpang	8.7	4.8	4.9	7.8	5.9
Thimphu	13.3	7.0	9.4	18.5	12.6
Trashigang	3.6	2.3	3.0	1.8	2.4
Trashiyangtse	4.2	2.9	3.7	2.5	3.1
Trongsa	7.5	2.5	2.4	4.7	3.3
Tsirang	7.8	3.0	4.0	2.7	3.4
Wangdue	4.9	3.5	3.9	3.9	3.9
Zhemgang	9.9	7.6	7.7	8.2	7.9
<b>Bhutan</b>	<b>10.7</b>	<b>4.1</b>	<b>5.5</b>	<b>7.2</b>	<b>6.2</b>

### 6.3 Sector of employment

Of the 249,030 employed persons, practically three out of seven persons were employed in the agriculture sector (agriculture & mining); one out of six in industry (manufacturing, electricity/gas/water, construction); one out of five in the services sector (consisting of retail/wholesale trade, hotel/restaurant, transport/communication, finance/insurance, public administration/security, education and health services); and the rest (one out of five) worked in other enterprises (Figure 6.1)



**Figure 6.1: Employed persons by major sector of economic activity, Bhutan, 2005**

Table 6.5 shows that among those employed in the Dzongkhags, Dagana and Lhuentse had the highest employment in the agriculture sector while Thimphu had the lowest. In Chukha, one out of three employed persons worked in the industry sector while in Thimphu, Paro and Haa about one out of three worked in services sector.

**Table 6.5: Percent employed by major sector of economic activity, Dzongkhag, 2005**

Dzongkhag	Sector of employment				Total employed
	Agriculture	Industry	Services	Others	
Bumthang	34.0	28.5	18.2	19.3	6,044
Chhukha	21.6	32.6	23.9	21.9	30,493
Dagana	71.3	7.3	9.5	12.0	9,611
Gasa	51.7	19.5	11.1	17.6	1,570
Haa	40.9	12.0	31.5	15.6	4,846
Lhuentse	70.6	8.9	9.6	10.9	6,525
Monggar	54.5	14.0	10.3	21.2	13,591
Paro	35.6	14.3	30.3	19.7	13,636
Pemagatshel	63.5	9.8	14.1	12.6	7,931
Punakha	61.1	12.5	14.6	11.8	9,352
Samdrupjongkhar	48.7	7.8	21.6	21.9	12,288
Samtse	67.8	10.5	11.5	10.2	24,760
Sarpang	38.2	12.9	23.5	25.3	13,993
Thimphu	9.0	22.2	36.7	32.1	36,116

Trashigang	66.7	8.7	13.2	11.4	19,527
Trashiyangtse	67.1	9.4	9.9	13.7	6,410
Trongsa	50.7	18.7	11.3	19.3	5,281
Tsirang	67.3	10.5	10.4	11.8	8,231
Wangdue	49.1	13.3	14.7	23.0	13,031
Zhemgang	38.4	16.8	12.5	32.3	5,794
Urban	6.4	23.2	42.8	27.7	70,132
Rural	59.8	13.2	10.6	16.4	178,898
<b>Bhutan</b>	<b>44.8</b>	<b>16.0</b>	<b>19.7</b>	<b>19.6</b>	<b>249,030</b>

Table 6.6 shows the employment status of the working population. It shows that 40 percent of the employed population comprises paid employees, consisting half of employed males and one-sixth of the employed females. In urban areas, 79 percent of males and 51 percent of females were paid employees. In rural areas, males were either paid employees (39%) or unpaid family workers (31%) while majority of the females (61%) were unpaid family workers.

**Table 6.6: Distribution of employed persons by employment status in main occupation by area and sex, Bhutan, 2005**

Employment Status	Urban			Rural			Bhutan		
	Male	Female	Both Sex	Male	Female	Both Sex	Male	Female	Both Sex
Employer	1,493	379	1,872	1,133	255	1,388	2,626	634	3,260
Paid employee	40,715	9,433	50,148	41,355	6,854	48,209	82,070	16,287	98,357
Own-account worker	5,341	4,863	10,204	22,544	16,804	39,348	27,885	21,667	49,552
Unpaid family worker	1,156	2,785	3,941	32,575	44,094	76,669	33,731	46,879	80,610
Others	2,816	1,151	3,967	8,945	4,339	13,284	11,761	5,490	17,251
<b>Total</b>	<b>51,521</b>	<b>18,611</b>	<b>70,132</b>	<b>106,552</b>	<b>72,346</b>	<b>178,898</b>	<b>158,073</b>	<b>90,957</b>	<b>249,030</b>

### 6.3 Dependency ratio

Table 6.7 shows the child and total dependency ratios. The child dependency ratio is defined as the proportion of population below 15 years of age to the population aged 15-64 for every 100 persons. It is an important indicator to check the proportion of children below 15 years to the working population of 15-64 years of age. The child dependency ratio of Bhutan was 53. Dagana's child dependency ratio was the highest at 68, followed by Trashiyangtse at 62 percent indicating that the two Dzongkhags had higher proportion of child dependents compared to other Dzongkhags. Thimphu, Paro, Chukha and Bumthang had less than 50 children for every 100 persons in the working age group 15-64 years.

The total dependency ratio (child and old age) was 60.6 percent indicating that for every 100 population in the working age group 15-64, 61 were dependents. The total dependency ratio was higher in Dagana (74%), Lhuentse (73%), Zhemgang (72%) and Trashiyangtse (72%). Thimphu and Chukha had the largest population of 15-64 (which may be attributed to young migrants) but also the lowest 65 years and above, thus lowering their total dependency ratio

**Table 6.7: Child and total dependency ratio, Dzongkhag, 2005**

Dzongkhag	Child dependency ratio	Total dependency ratio	Total population
Bumthang	48.9	58.8	16,116
Chhukha	45.7	49.7	74,387
Dagana	66.1	73.9	22,670
Gasa	52.9	61.7	3,116
Haa	50.2	57.9	11,648
Lhuentse	61.3	73.0	15,395
Monggar	58.8	68.2	37,069
Paro	45.7	53.8	36,433
Pemagatshel	55.9	69.1	22,287
Punakha	53.2	61.8	23,462
Samdrupjongkhar	60.7	68.3	33,889
Samtse	55.1	63.0	60,100
Sarpang	55.0	60.9	37,101
Thimphu	44.6	48.9	92,929
Trashigang	58.3	67.5	48,783
Trashiyangtse	62.3	71.6	17,740
Trongsa	57.9	69.5	13,419
Tsirang	56.2	65.3	18,667
Wangdue	56.1	65.6	31,135
Zhemgang	60.9	72.2	18,636
Urban	46.4	56.4	196,111
Rural	49.7	66.1	438,871
<b>Bhutan</b>	<b>53.1</b>	<b>60.6</b>	<b>634,982</b>

## Chapter 7: Housing and Household amenities

The PHCB 2005 collected housing information including the type of dwelling, main materials used for walls and roof as well as the details of the occupancy status. Besides the housing characteristics, it also collected information on household amenities and the accessibility to services. This chapter therefore, provides household information but also highlights some of the MDG indicators including population access to improved water sources, sanitation and population using solid fuels.

### 7.1 House occupancy status

Figure 7.1 shows that three out of five households in Bhutan lived in their own dwellings with proportion higher in rural (78%) than in urban areas (16%). At least one-fifth of the households were rented out while another one-fifth had free accommodation with the higher proportion being for private dwellings.

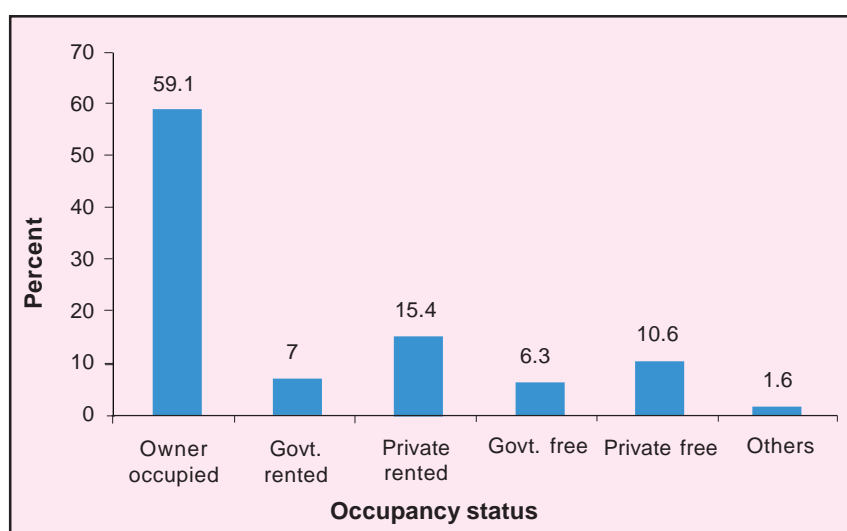


Figure 7.1: House occupancy status by tenure, Bhutan, 2005

At least five out of six households in Trashiyangtse, Dagana, Pemagatshel and Lhuentse were occupied by the owners themselves while it was 50 percent in rest of the Dzongkhags except for Thimphu (19%) and Chukha (39%). This means that 48 percent of households in Thimphu and 39 percent in Chukha lived in rented houses. With regard to free accommodation, Thimphu recorded the highest (30%) followed by Ha (24%) while Pemagatshel had the lowest with just three in 50 households (Table 7.1).

Table 7.1: Distribution of households by tenure, Dzongkhag, 2005

Dzongkhag	House occupation status						Total households
	Owner occupied	Rented		Rent free		Others	
		Govt.	Private	Govt.	Private		
Bumthang	63.0	4.6	14.6	6.8	9.6	1.4	2,870
Chhukha	38.5	18.1	20.6	9.2	11.2	2.4	14,482
Dagana	83.5	1.8	4.7	2.8	6.5	0.7	4,350
Gasa	77.0	0.4	1.8	4.1	16.0	0.7	727
Haa	54.3	6.6	13.5	4.5	19.4	1.7	2,290
Lhuentse	86.1	3.8	2.3	2.2	4.5	1.0	3,001
Monggar	75.8	6.3	6.5	3.6	6.9	0.8	7,348
Paro	52.1	3.3	24.2	9.4	9.9	1.2	7,118
Pemagatshel	83.8	2.9	6.4	1.7	4.7	0.5	4,881
Punakha	58.8	3.9	15.2	10.1	9.5	2.5	4,564



Samdrupjongkhar	65.6	4.9	11.5	3.5	14.1	0.4	6,951
Samtse	73.3	8.1	7.6	3.4	6.9	0.7	11,634
Sarpang	56.8	4.2	18.3	6.2	13.7	0.8	7,346
Thimphu	18.6	11.4	36.7	11.4	18.3	3.6	18,512
Trashigang	78.5	4.4	7.4	2.8	5.6	1.4	10,281
Trashiyangtse	82.8	3.2	5.5	4.2	3.8	0.5	3,764
Trongsa	65.9	3.9	10.0	6.4	12.6	1.3	2,739
Tsirang	77.7	2.5	7.2	5.8	6.3	0.5	3,651
Wangdue	63.4	2.1	10.3	7.4	14.8	2.0	6,227
Zhemgang	76.6	4.1	6.8	3.9	7.5	1.1	3,379
Urban	15.9	17.4	38.1	7.4	19.1	2.1	38,311
Rural	77.9	2.5	5.5	5.8	6.9	1.3	87,804
<b>Bhutan</b>	<b>59.1</b>	<b>7.0</b>	<b>15.4</b>	<b>6.3</b>	<b>10.6</b>	<b>1.6</b>	<b>126,115</b>

## 7.2 Housing conditions

At least three in seven households lived in dwellings with concrete/brick/stone-walls, and one in six with wood and one in seven with bamboo while the rest (6%) with CGI/metal, straw/leaves and other types of wall materials. The proportion of rural households with different types of wall materials used was closer to the national proportion except for concrete/brick/stone with 39 percent against 46 percent (national proportion).

More than one-third of the households in Trashigang had dwellings with concrete/bricks/stone; about of the households in Chukha with CGI/metal, about three-fifths of households in Wangdue, Punakha and Haa had mud walls, one-fourth of the households in Bumthang used wood, while two-eighths in Zhemgang had bamboo-walls (Table 7.2).

**Table 7.2 Percent distribution of households by type of external walls, Dzongkhag, 2005**

Dzongkhag	Concrete/ Brick/ stone	CGI/ metal	Mud	Wood	Straw/ leaves	Bamboo	Others	Total house holds
Bumthang	43.0	1.3	14.1	26.1	0.2	10.1	5.3	2,870
Chhukha	52.9	7.0	8.9	14.5	0.5	13.3	2.9	14,482
Dagana	27.8	1.1	26.6	23.1	0.9	18.7	1.9	4,350
Gasa	59.0	2.1	13.3	10.0	0.4	8.1	7.0	727
Haa	17.9	2.9	60.3	13.3	0.1	1.8	3.7	2,290
Lhuentse	60.4	0.8	10.9	15.8	0.1	11.3	0.6	3,001
Monggar	59.0	1.2	14.2	13.9	0.2	6.7	4.7	7,348
Paro	26.5	2.6	53.1	14.3	0.0	2.2	1.3	7,118
Pemagatshel	50.3	1.3	12.9	16.4	0.5	17.4	1.3	4,881
Punakha	17.1	2.7	60.5	9.7	0.1	7.4	2.5	4,564
Samdrupjongkhar	49.5	2.4	11.3	15.3	1.0	19.4	1.2	6,951
Samtse	37.2	1.8	14.4	22.0	0.9	22.1	1.5	11,634
Sarpang	47.6	1.2	7.2	21.5	0.2	20.9	1.4	7,346
Thimphu	47.4	4.8	23.6	17.4	0.0	5.6	1.2	18,512
Trashigang	68.4	1.5	9.0	8.1	0.1	12.3	0.6	10,281
Trashiyangtse	76.2	0.4	5.2	4.4	0.1	8.8	4.7	3,764
Trongsa	42.6	1.9	25.7	8.9	0.1	18.1	2.7	2,739
Tsirang	49.0	1.3	18.9	12.4	0.3	15.6	2.4	3,651
Wangdue	13.9	2.8	58.6	13.6	0.0	9.1	2.0	6,227
Zhemgang	40.8	1.7	6.4	18.2	0.9	28.6	3.3	3,379
Urban	60.5	3.3	14.0	13.9	0.1	6.5	1.7	38,311
Rural	38.9	2.6	24.2	16.2	0.5	15.4	2.2	87,804
<b>Bhutan</b>	<b>45.5</b>	<b>2.8</b>	<b>21.1</b>	<b>15.5</b>	<b>0.3</b>	<b>12.7</b>	<b>2.1</b>	<b>126,115</b>

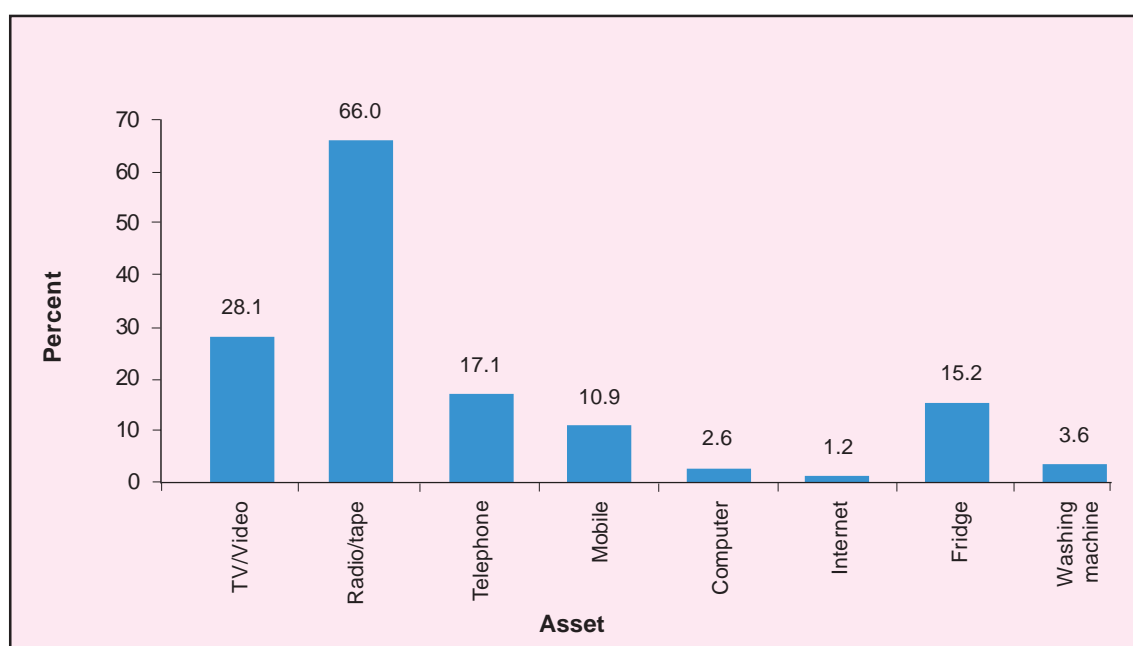
Table 7.3 shows the household distribution by roofing materials. CGI/metal sheets were widely used in Bhutan with five in six urban households and four in seven rural households using it. One out of 12 households used wood, 8 percent used straw and 7 percent used bamboo and the rest (7%) used either concrete/brick/stone, mud, slate or others. Five out of six households in Thimphu lived in dwellings roofed with CGI/metal sheets and in Gasa, only three out five households. This means, in Gasa at least half of the households used wood as a roofing material. Concrete/brick/stone as roofing materials was hardly (3%) used in Bhutan, with only one in 11 households in Chukha using such roofing materials. Use of bamboo was more common in Trashiyangtse (22%), Trashigang (22%) and Lhuentse (21%) and straw/leaves were common in Zhemgang (26%), Dagana (25%), Tsirang (25%), Samtse (22%) and Pemagatshel (17%). 8 percent of the households in Pemagatshel used slates to roof their houses.

**Table 7.3 Percent distribution of households by type of roof materials, Dzongkhag, 2005**

Dzongkhag	Concrete/ Brick/ stone	CGI/ metal	Mud	Wood	Straw/ leaves	Bamboo	Slate	Others	Total house holds
Bumthang	0.5	51.4	0.6	36.5	0.0	6.4	1.5	3.0	2,870
Chhukha	9.1	69.2	0.3	2.9	6.9	5.9	0.2	5.3	14,482
Dagana	0.9	61.2	0.3	4.6	25.2	2.8	0.4	4.5	4,350
Gasa	1.2	35.8	0.6	51.2	0.3	0.6	0.0	10.5	727
Haa	1.6	56.8	0.9	34.1	0.0	2.1	0.3	4.2	2,290
Lhuentse	1.3	56.7	0.2	20.5	0.2	20.6	0.0	0.4	3,001
Monggar	1.3	51.2	0.5	34.1	2.0	7.2	0.6	3.1	7,348
Paro	1.0	71.1	0.8	24.2	0.0	0.6	0.8	1.5	7,118
Pemagatshel	2.4	55.0	0.7	11.6	17.0	4.8	7.9	0.5	4,881
Punakha	1.9	72.2	1.0	16.5	0.4	1.5	2.7	3.8	4,564
Samdrupjongkhar	5.3	55.9	0.4	4.9	19.9	11.7	0.3	1.7	6,951
Samtse	4.1	66.8	0.3	0.8	21.6	3.9	0.1	2.5	11,634
Sarpang	5.4	72.3	0.5	1.1	10.8	1.2	3.5	5.2	7,346
Thimphu	2.5	83.9	0.4	7.1	0.0	1.3	1.1	3.6	18,512
Trashigang	1.4	57.7	0.3	17.6	0.1	22.1	0.1	0.8	10,281
Trashiyangtse	1.0	53.9	0.2	22.0	0.1	22.4	0.0	0.4	3,764
Trongsa	0.7	65.1	0.6	12.0	0.3	18.3	0.3	2.7	2,739
Tsirang	2.2	68.3	0.5	1.6	24.5	0.6	0.2	2.1	3,651
Wangdue	0.4	58.8	1.5	27.9	0.0	4.7	4.5	2.1	6,227
Zhemgang	0.9	53.2	0.3	7.9	25.5	9.2	0.1	3.0	3,379
Urban	7.3	83.2	0.3	3.0	0.1	2.3	1.2	2.7	38,311
Rural	1.2	57.6	0.6	16.7	10.9	8.7	1.2	3.1	87,804
<b>Bhutan</b>	<b>3.1</b>	<b>65.4</b>	<b>0.5</b>	<b>12.6</b>	<b>7.6</b>	<b>6.8</b>	<b>1.2</b>	<b>2.9</b>	<b>126,115</b>

### 7.3 Asset ownership

The most widely owned asset in both urban and rural areas (two-third of households) was the radio/tape players (Figure 7.2). Two in seven households owned TV/Video with the proportion much higher in urban (64%) than in rural areas (12%). One in six households had telephone (land line) while one in nine households owned mobile phones. Only one in 40 households had computer and barely one in 80 households had internet facility. Three in 20 households owned refrigerators while only three in 80 had washing machines. One in 10 households owned a vehicle. At least two in five households owned land, housing and livestock with the proportion higher in rural than in urban areas. One in eight urban households in and one in 12 rural households owned business.



**Figure 7.2: Households owning assets, Bhutan, 2005**

Table 7.4 shows that, Dzongkhag wise, Thimphu had the largest proportion of households with TV/video (62%), telephone (42%), mobile (37%), computer (10%), Internet (5%), washing machine (13%), vehicle (27%) and business (12%). Gasa had the largest proportion of households owning radio/tape (81%) land (89%) and livestock (65%). Punakha had the highest proportion for machinery (7%) while Dagana had the highest housing proportion (71%).

**Table 7.4(a): Percent distribution of households owning assets, Dzongkhag, 2005**

Dzongkhag	TV/Video	Radio/tape	Telephone	Mobile	Computer	Internet	Fridge	Washing machine
Bumthang	27.3	76.4	25.7	0.5	2.1	1.4	9.8	2.9
Chhukha	42.1	61.1	23.9	21.1	3.5	1.7	22.9	5.4
Dagana	8.7	67.0	4.2	0.2	0.3	0.1	3.7	0.3
Gasa	1.5	80.6	9.2	0.6	0.1	0.0	0.4	0.4
Haa	35.9	78.6	21.5	0.8	1.1	0.6	10.5	2.4
Lhuentse	7.6	66.4	4.1	0.1	0.3	0.0	4.4	0.4
Monggar	13.5	64.6	7.6	0.2	0.7	0.2	8.1	1.5
Paro	36.3	75.6	25.9	22.2	2.6	1.1	22.3	5.7
Pemagatshel	10.2	64.4	5.3	0.2	0.3	0.1	3.1	0.5
Punakha	23.6	72.3	17.7	10.4	1.1	0.4	17.1	2.0
Samdrupjongkhar	22.4	59.8	9.1	4.6	1.0	0.5	10.4	1.1
Samtse	23.7	57.5	5.9	1.6	0.8	0.2	12.8	1.1
Sarpang	28.5	66.4	17.3	7.5	1.0	0.4	18.9	1.6
Thimphu	61.6	68.8	42.0	37.7	9.9	5.1	33.9	13.0
Trashigang	13.9	62.9	8.7	0.1	0.9	0.3	6.1	1.1
Trashiyangtse	9.7	64.2	4.9	0.1	0.7	0.3	3.7	0.4
Trongsa	13.9	67.2	12.6	0.2	0.6	0.4	5.8	1.3
Tsirang	10.6	72.8	7.8	0.2	0.3	0.2	4.5	0.8
Wangdue	19.0	69.9	10.5	7.4	0.9	0.4	12.0	1.2
Zhemgang	11.9	61.3	9.8	0.2	0.7	0.3	6.2	0.8
Urban	64.3	67.6	40.2	28.3	7.3	3.7	37.7	10.2
Rural	12.3	65.2	7.1	3.3	0.5	0.2	5.4	0.8
<b>Bhutan</b>	<b>28.1</b>	<b>66.0</b>	<b>17.1</b>	<b>10.9</b>	<b>2.6</b>	<b>1.2</b>	<b>15.2</b>	<b>3.6</b>

**Table 7.4(b): Percent distribution of households owning assets, Dzongkhag, 2005**

Dzongkhag	Vehicle	Machinery	Land	Housing	Livestock	Business
Bumthang	14.5	4.6	63.6	53.0	43.3	7.9
Chhukha	12.4	1.0	47.3	32.9	24.3	6.9
Dagana	2.5	1.5	84.4	70.8	58.8	4.6
Gasa	3.0	0.6	89.4	69.2	65.3	4.0
Haa	9.1	5.4	59.5	50.1	44.2	5.2
Lhuentse	3.4	4.3	83.1	65.2	54.7	3.0
Monggar	4.7	1.5	69.5	49.2	52.0	3.2
Paro	16.4	5.9	61.2	51.2	40.9	8.6
Pemagatshel	3.0	0.8	79.1	48.5	43.8	1.8
Punakha	10.6	6.6	62.3	56.7	49.4	5.3
Samdrupjongkhar	3.8	0.9	68.3	49.8	40.1	4.6
Samtse	4.4	0.7	69.9	49.9	48.7	3.6
Sarpang	8.1	1.5	71.6	54.9	47.5	7.9
Thimphu	27.2	3.1	42.4	32.1	15.6	11.9
Trashigang	4.0	1.9	73.9	54.5	48.4	3.0
Trashiyangtse	3.1	3.2	88.9	68.1	58.0	3.2
Trongsa	6.4	5.6	70.4	53.9	48.7	4.3
Tsirang	5.3	1.2	79.9	57.6	57.5	4.3
Wangdue	8.3	6.2	63.4	55.9	51.5	5.4
Zhemgang	4.1	0.9	78.0	54.5	50.8	3.9
urban	23.7	2.6	43.2	31.8	14.4	12.5
rural	4.2	2.5	73.9	56.2	52.8	3.1
<b>Bhutan</b>	<b>10.1</b>	<b>2.6</b>	<b>64.5</b>	<b>48.8</b>	<b>41.2</b>	<b>6.0</b>

#### 7.4 Access to road head

Three out of five households in Bhutan took less than half an hour to reach the nearest road head. Almost all (99.4%) urban households and only half (47%) of the rural households took less than half an hour to reach the nearest road head. Although a good share of households lived up to six hours from road head, about one in seven households in rural areas were situated more than six hours away from the nearest road. Households in Gasa (69%), Zhemgang (44%), Pemagatshel (23%), Samdrupjongkhar (21%), Monggar (18%), and Samtse (17%) fall under 10 percent share of the total households that lived more than six hours away from the nearest road head (Table 7.5).

**Table 7.5 Percent distribution of households by time taken to reach the nearest road head, Dzongkhag, 2005**

Dzongkhag	< 30 min	30 min - 1 hr	1 - 2 hrs	2 - 3 hrs	3 - 4 hrs	4 - 5 hrs	5 - 6 hrs	> 6 hrs	Total household
Bumthang	88.1	7.6	1.3	0.5	0.6	0.7	0.0	1.1	2,870
Chhukha	76.4	5.7	2.7	2.2	2.0	2.1	1.9	6.9	14,482
Dagana	45.5	14.6	11.8	7.5	5.6	4.6	2.8	7.5	4,350
Gasa	18.4	4.0	2.6	1.9	0.3	1.1	2.5	69.2	727
Haa	80.7	4.0	3.9	0.4	0.2	0.2	0.0	10.7	2,290
Lhuentse	30.2	7.3	12.1	9.9	10.9	12.8	7.9	9.0	3,001
Monggar	39.3	8.8	7.7	9.8	10.5	4.0	1.5	18.4	7,348
Paro	83.0	8.6	3.4	3.7	0.5	0.1	0.0	0.6	7,118
Pemagatshel	30.3	6.3	6.0	7.7	8.9	7.8	10.4	22.5	4,881
Punakha	71.0	11.4	7.9	6.1	2.0	0.6	0.7	0.3	4,564
Samdrupjongkhar	49.2	3.3	4.0	5.4	6.0	5.4	5.4	21.2	6,951
Samtse	48.1	9.4	8.3	6.8	6.0	3.1	1.6	16.7	11,634
Sarpang	76.3	8.7	4.0	1.4	0.9	1.0	0.4	7.3	7,346
Thimphu	94.9	1.9	0.9	0.5	0.3	0.3	0.0	1.2	18,512
Trashigang	49.4	13.1	8.6	8.1	3.8	2.8	2.8	11.5	10,281
Trashiyangtse	40.0	11.7	12.8	15.0	7.7	4.6	3.4	4.9	3,764
Trongsa	59.9	11.6	7.3	7.7	2.9	3.8	2.4	4.4	2,739
Tsirang	51.3	10.9	8.7	13.6	7.9	4.6	1.5	1.5	3,651
Wangdue	61.2	9.6	10.0	5.6	4.8	2.5	2.8	3.5	6,227
Zhemgang	39.9	4.4	1.7	4.2	3.2	1.2	1.6	43.9	3,379
Urban	99.4	0.4	0.0	0.0	0.0	0.0	0.0	0.2	38,311
Rural	47.1	10.9	8.1	7.5	5.6	3.9	3.0	13.9	87,804
<b>Bhutan</b>	<b>63.0</b>	<b>7.7</b>	<b>5.7</b>	<b>5.2</b>	<b>3.9</b>	<b>2.7</b>	<b>2.1</b>	<b>9.7</b>	<b>126,115</b>

## 7.5 Water source

One in four households in Bhutan had access to pipe water in their own dwellings with the urban proportion (54%) six times more than the rural areas (9%). More than two-thirds of rural and three-sevenths of urban households had access to piped water outside the house. One in seven households in the country relied on spring/river/pond and the rest on other sources.

One in two households in Thimphu had piped water in their dwellings followed by Chukha with two in five households. Three in five households in Dagana and about 50 percent households in Gasa had piped water (although only 4 percent had piped water in their dwellings) forcing about one third of the households in Dagana and at least half the households in Gasa to rely on spring/river/pond (Table 7.6).

**Table 7.6: Percent distribution of households by main source of drinking water, Dzongkhag, 2005**

Dzongkhag	Piped water within house	Piped water outside house	Spring/river/pond	Rain water	Tube well	Others	Total house holds
Bumthang	18.0	74.0	7.2	0.1	0.1	0.7	2,870
Chhukha	40.8	42.3	15.8	0.1	0.3	0.7	14,482
Dagana	4.0	57.7	36.3	0.1	0.4	1.6	4,350
Gasa	4.4	43.3	52.1	0.0	0.0	0.1	727
Haa	30.5	57.2	11.1	0.0	0.0	1.1	2,290
Lhuentse	8.4	79.2	11.4	0.0	0.3	0.7	3,001
Monggar	14.6	66.8	15.7	0.6	0.4	1.9	7,348
Paro	26.6	60.9	10.5	0.1	0.7	1.3	7,118
Pemagatshel	9.5	71.7	16.2	0.3	0.2	2.0	4,881
Punakha	17.2	68.8	12.3	0.0	0.2	1.4	4,564
Samdrupjongkhar	18.1	69.2	11.7	0.0	0.4	0.5	6,951
Samtse	12.4	63.3	22.5	0.1	0.2	1.5	11,634
Sarpang	23.7	62.8	12.2	0.1	0.1	1.1	7,346
Thimphu	48.6	48.2	2.5	0.0	0.1	0.6	18,512
Trashigang	11.7	71.1	15.4	0.0	0.1	1.7	10,281
Trashiyangtse	9.0	77.1	11.9	0.0	0.2	1.8	3,764
Trongsa	12.1	71.7	15.4	0.0	0.0	0.8	2,739
Tsirang	10.0	66.6	21.9	0.0	0.1	1.4	3,651
Wangdue	12.6	68.9	16.7	0.1	0.2	1.5	6,227
Zhemgang	10.6	67.1	20.2	0.1	0.2	1.8	3,379
Urban	53.7	44.3	1.5	0.0	0.1	0.4	38,311
Rural	9.2	69.0	19.9	0.1	0.3	1.6	87,804
<b>Bhutan</b>	<b>22.7</b>	<b>61.5</b>	<b>14.3</b>	<b>0.1</b>	<b>0.2</b>	<b>1.2</b>	<b>126,115</b>

## 7.6 Toilet facilities

At least one in two households in Bhutan had access to pit latrine. About one in five households had access to independent and modern flush toilets in their dwellings. One in 20 households did not have toilet facilities with rural areas being more acute (13%) than in urban areas (4%).

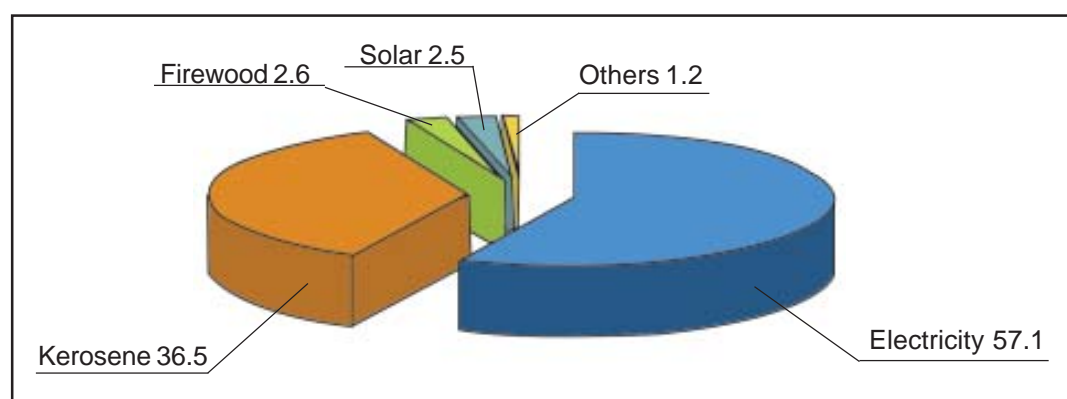
Table 7.7 shows that at least two out of five households in Thimphu, Chukha, Sarpang, Haa and Paro had access to flush toilets which was more than the national average (36%). Conversely, pit latrine was very common in rest of the Dzongkhags being as high as two-thirds of households in Bumthang and Dagana. Except Bumthang (5%), Thimphu (6%) and Sarpang (7%), at least one in 20 households in other Dzongkhags had no access to toilet facility.

**Table 7.7: Percent distribution of households by type of toilet facilities, Dzongkhag, 2005**

Dzongkhag	Independent flush toilet inside house	Independent flush toilet outside house	Shared flush toilet outside house	VIDP latrine outside house	Long drop latrine inside house	Pit latrine	Others	No toilet facility	Total households
Bumthang	11.5	5.6	3.2	0.6	0.2	72.4	1.4	5.1	2,870
Chhukha	36.1	9.1	10.0	3.1	0.5	27.8	0.6	12.7	14,482
Dagana	3.3	7.3	4.0	1.5	0.2	70.9	0.2	12.6	4,350
Gasa	4.0	1.9	2.6	0.6	0.0	68.2	0.0	22.7	727
Haa	23.1	11.9	6.2	1.7	0.7	43.9	0.9	11.6	2,290
Lhuentse	4.9	6.2	1.6	0.7	0.4	71.4	0.7	14.1	3,001
Monggar	11.5	4.1	3.2	4.3	0.4	65.4	0.8	10.3	7,348
Paro	24.9	9.8	6.4	2.2	1.1	44.5	0.8	10.2	7,118
Pemagatshel	6.5	8.6	3.3	1.1	0.2	71.1	0.3	8.9	4,881
Punakha	13.4	7.6	6.6	1.8	0.7	58.1	0.6	11.2	4,564
Samdrupjongkhar	14.6	10.4	7.9	3.2	0.3	53.4	0.5	9.7	6,951
Samtse	10.5	13.3	12.5	4.4	0.5	48.9	0.8	9.1	11,634
Sarpang	17.7	16.5	11.4	2.5	0.4	44.3	0.9	6.5	7,346
Thimphu	39.6	12.0	13.4	4.1	0.5	23.3	1.2	5.9	18,512
Trashigang	8.7	6.8	3.6	2.6	0.2	64.3	0.6	13.3	10,281
Trashiyangtse	6.0	3.6	2.0	1.4	0.2	76.3	0.2	10.2	3,764
Trongsa	9.3	9.0	6.8	1.9	0.6	58.2	0.4	13.8	2,739
Tsirang	9.0	16.6	4.3	2.1	0.2	57.8	0.4	9.6	3,651
Wangdue	8.9	6.7	6.0	3.4	0.9	62.1	0.5	11.5	6,227
Zhemgang	7.9	6.0	4.2	13.1	0.3	55.1	0.7	12.8	3,379
Urban	45.5	13.0	15.5	3.7	0.5	16.9	1.0	3.9	38,311
Rural	6.7	8.0	4.3	3.0	0.4	64.2	0.6	12.8	87,804
<b>Bhutan</b>	<b>18.5</b>	<b>9.5</b>	<b>7.7</b>	<b>3.2</b>	<b>0.5</b>	<b>49.8</b>	<b>0.7</b>	<b>10.1</b>	<b>126,115</b>

### 7.7 Source of lighting

Figure 7.3 illustrates that more than half (57%) of the households in Bhutan used electricity as the main source of lighting and about three in eight (37%) households used kerosene. The remaining households depended on firewood (2.6%), solar (2.5%) and other sources of lighting (1.2%).



**Figure 7.3: Percent distribution of households by main source of lighting, Bhutan, 2005**



Majority of households in Thimphu (96%), Paro (81%) and Haa (78%) used electricity to light their homes. Gasa had none using electricity for lighting, with half of the households depending on solar. One in seven households in Tsirang used electricity as the main source of lighting but three quarters of the households used kerosene. One out of 10 households in Monggar used firewood as the main source of lighting (Table 7.8).

**Table 7.8: Percent distribution of households by main source of lighting, Dzongkhag, 2005**

Dzongkhag	Electricity	Kerosene	Firewood	Solar	Others	Total households
Bumthang	60.1	21.2	1.4	13.8	3.5	2,870
Chhukha	71.3	25.6	1.5	0.3	1.3	14,482
Dagana	20.3	73.1	2.5	2.4	1.7	4,350
Gasa	0.0	44.3	5.6	49.7	0.4	727
Haa	78.1	13.4	1.1	6.8	0.5	2,290
Lhuentse	29.4	60.1	5.7	4.1	0.7	3,001
Monggar	40.0	42.6	10.1	2.2	5.0	7,348
Paro	81.4	16.3	0.5	1.1	0.7	7,118
Pemagatshel	33.0	57.3	5.7	2.1	2.0	4,881
Punakha	71.2	26.0	1.0	1.2	0.7	4,564
Samdrupjongkhar	41.2	53.1	2.3	2.7	0.7	6,951
Samtse	40.5	55.5	2.8	0.7	0.5	11,634
Sarpang	56.9	40.8	0.5	0.7	1.0	7,346
Thimphu	95.9	2.6	0.3	0.8	0.4	18,512
Trashigang	62.6	30.9	4.5	1.3	0.8	10,281
Trashiyangtse	44.9	51.6	1.0	2.3	0.3	3,764
Trongsa	26.8	63.1	4.9	3.2	2.0	2,739
Tsirang	14.1	76.3	1.6	7.1	0.9	3,651
Wangdue	50.2	38.3	2.2	8.0	1.3	6,227
Zhemgang	25.4	65.8	5.1	2.2	1.4	3,379
Urban	96.4	2.6	0.2	0.3	0.5	38,311
Rural	40.0	51.3	3.7	3.5	1.5	87,804
<b>Bhutan</b>	<b>57.1</b>	<b>36.5</b>	<b>2.6</b>	<b>2.5</b>	<b>1.2</b>	<b>126,115</b>

## 7.8 Source of cooking

Table 7.9 shows households about their two main sources of cooking. In urban areas, majority of the households used electricity (82%) and LPG (77%) while in rural areas the majority used firewood (75%) and only 29 percent used electricity and 20 percent LPG. Only about one out of 11 households used kerosene for cooking. Solar was hardly used in any Dzongkhags. Households in Thimphu commonly used electricity and LPG, while at least 50 percent of households in other Dzongkhags except Paro, Chukha, Haa and Punakha used firewood as one of the two main sources of cooking.

**Table 7.9: Percent distribution of households by main source of cooking, Dzongkhag, 2005**

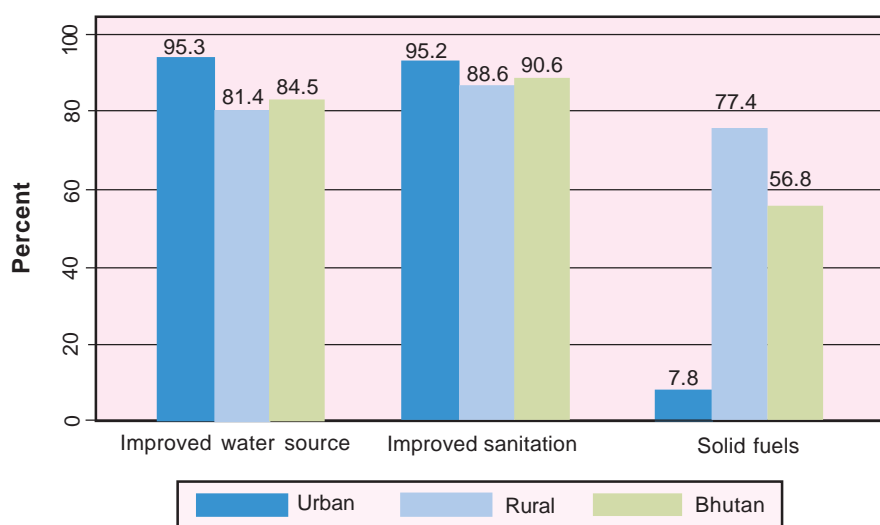
Dzongkhag	Electricity	Kerosene	Firewood	Solar	LPG	Others	Total households
Bumthang	26.2	2.3	56.6	0.2	32.5	0.2	2,870
Chhukha	51.2	12.9	39.6	0.1	50.0	1.2	14,482
Dagana	13.0	9.0	86.1	0.1	13.3	0.6	4,350
Gasa	-	4.1	84.5	1.0	21.0	0.1	727
Haa	71.4	15.2	43.8	0.1	51.3	1.0	2,290
Lhuentse	24.1	7.1	75.7	0.2	19.4	0.0	3,001
Monggar	29.5	5.6	76.2	0.1	18.4	0.4	7,348
Paro	65.5	5.3	26.4	0.1	52.9	0.6	7,118
Pemagatshel	25.3	9.8	81.5	0.1	15.4	0.6	4,881
Punakha	64.7	6.6	48.0	-	47.8	0.1	4,564
Samdrupjongkhar	34.7	12.3	65.0	0.2	29.9	0.3	6,951
Samtse	26.1	12.1	73.0	0.0	14.9	0.1	11,634
Sarpang	39.5	12.4	50.8	0.1	38.1	0.1	7,346
Thimphu	85.2	7.1	9.2	0.1	78.3	0.6	18,512
Trashigang	47.1	5.8	73.8	0.1	21.8	0.1	10,281
Trashiyangtse	29.3	3.7	76.2	0.1	14.0	0.1	3,764
Trongsa	24.0	17.3	72.7	0.1	35.2	0.2	2,739
Tsirang	12.3	11.2	82.7	0.1	18.4	0.1	3,651
Wangdue	44.4	8.1	60.8	0.3	40.9	0.2	6,227
Zhemgang	17.0	7.0	78.9	0.1	17.7	0.2	3,379
Urban	82.2	9.5	7.6	0.1	77.1	0.3	38,311
Rural	28.6	8.8	75.3	0.1	20.3	0.5	87,804
<b>Bhutan</b>	<b>44.9</b>	<b>9.0</b>	<b>54.7</b>	<b>0.1</b>	<b>37.6</b>	<b>0.4</b>	<b>126,115</b>

### 7.8 Access to basic amenities (MDG indicators)

Access to improved water source, sanitation and using solid fuels are MDG indicators and are based on the proportion of population and not households. Figure 7.4 illustrates the three indicators by urban and rural areas. Though, improved water sources include protected spring or pond, the ‘spring/river/pond’ indicators in the Census 2005 is treated as unprotected and so excluded while determining the MDG indicators. Hence, the rate calculated may be slightly constricted.

About six in seven persons had access to improved water sources with the proportion higher in urban (95%) than in rural areas (81%). Toilet facilities including sewers or septic tanks, flush-latrines, simple pits or ventilated improved pit latrines are adequate to be categorized as improved sanitation. Hence, toilet facilities including flush toilets, VIDP and pit latrines were enumerated to derive the indicator. Nine out of 10 people in Bhutan belonged to households that had access to improved sanitation with the proportion higher in urban (95%) than in rural areas (89%).

Solid fuels include biomass fuels (wood, charcoal, crop residues and dung) and coal. Source of cooking fuels specified in the Census 2005 questionnaire included electricity, kerosene, firewood, solar, LPG and others. Hence, firewood is the only variable that can be considered as solid fuel since other forms of solid fuels if used and recorded under ‘others’ cannot be differentiated. Nevertheless, the share of ‘others’ for cooking was barely 0.4 percent. 77 percent of the population belonged to rural households using solid fuel compared to about three in 40 among the urban population.

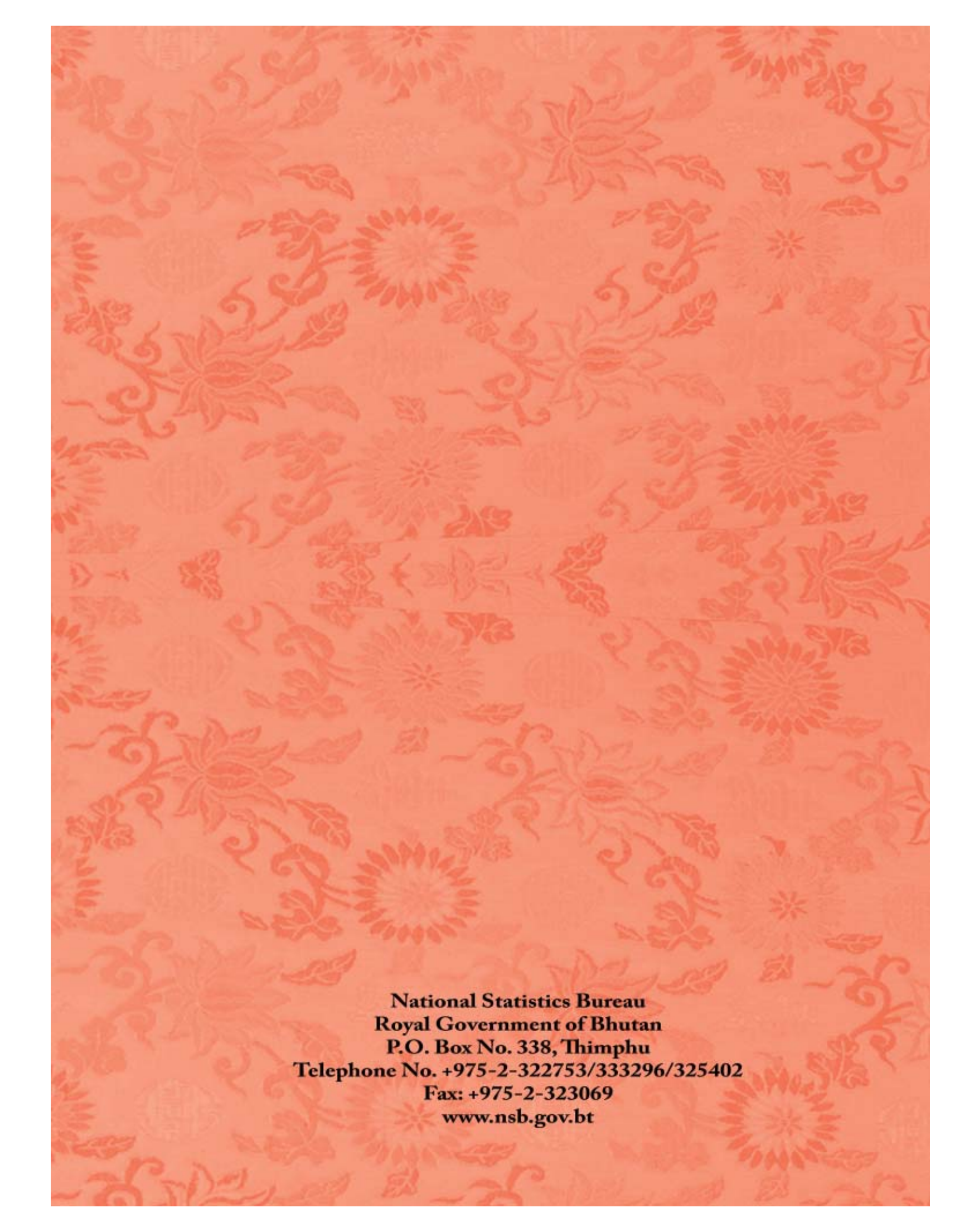


**Figure 7.4: Proportion of population with access to improved water source, access to improved sanitation, and use of solid fuels (firewood) by areas, Bhutan, 2005**

Table 7.10 shows the indicators by area and Dzongkhag. Thimphu (97%), Bumthang (93%) and Lhuentse (90%) had higher proportion of population with access to improved water sources compared to less than half (47%) of the population in Gasa. It is observed that 19 out of 20 persons in Bumthang, Thimphu and Sarpang had access to improved sanitation while it was only four out of five persons in Gasa. At least four in five persons in Dagana (89%), Tsirang (86%) and Gasa (86%), Pemagatshel (81%) and Zhemgang (81%) belonged to household using solid fuels compared to one in 12 (8%) in Thimphu.

**Table 7.10: Proportion of population with access to improved water source, improved sanitation and using solid fuels by area, Dzongkhag, 2005**

Dzongkhag	Improved water source			Improved sanitation			Using solid fuels (firewood)		
	Urban	Rural	Both areas	Urban	Rural	Both areas	Urban	Rural	Both areas
Bumthang	94.8	92.8	92.7	93.9	94.3	94.2	19.1	72.0	59.1
Chhukha	95.6	76.1	82.7	96.6	80.8	88.0	7.7	73.8	43.8
Dagana	78.3	59.7	61.5	94.3	89.9	90.3	28.6	94.8	89.3
Gasa	87.0	39.4	46.5	94.5	77.0	78.8	33.9	92.4	86.4
Haa	90.2	88.8	88.9	96.6	87.4	89.0	6.8	50.3	42.6
Lhuentse	90.9	89.8	90.0	90.5	87.6	87.8	17.5	80.9	76.2
Monggar	94.7	81.6	82.7	95.7	89.7	90.6	12.4	91.0	78.9
Paro	94.1	87.2	88.2	93.2	89.3	89.6	3.0	29.1	27.0
Pemagatshel	92.6	80.8	81.9	92.1	92.3	92.3	16.6	89.5	81.4
Punakha	92.5	85.3	86.1	88.7	89.6	89.5	10.0	54.5	51.3
Samdrupjongkhar	96.8	85.2	87.6	95.8	89.0	90.8	5.6	90.5	67.4
Samtse	94.3	71.4	75.2	96.7	90.0	91.1	11.3	90.6	77.7
Sarpang	96.6	82.8	85.9	95.7	93.3	94.0	10.5	75.2	55.5
Thimphu	98.3	95.9	97.1	95.3	82.5	93.6	3.8	35.9	8.2
Trashigang	94.7	81.6	83.3	94.7	87.1	87.9	14.1	82.0	74.7
Trashiyangtse	91.7	86.4	86.8	87.5	92.3	91.6	20.5	86.1	76.8
Trongsa	90.1	86.5	86.1	95.2	87.2	88.6	13.2	89.6	75.8
Tsirang	87.4	76.1	77.4	97.2	91.1	91.7	10.5	92.6	85.6
Wangdue	91.2	79.5	82.1	92.2	88.3	89.2	12.4	77.9	62.9
Zhemgang	93.6	78.1	79.6	93.6	87.5	88.5	19.1	92.2	80.7
<b>Bhutan</b>	<b>95.3</b>	<b>81.4</b>	<b>84.5</b>	<b>95.2</b>	<b>88.6</b>	<b>90.6</b>	<b>7.8</b>	<b>77.4</b>	<b>56.8</b>



**National Statistics Bureau  
Royal Government of Bhutan  
P.O. Box No. 338, Thimphu  
Telephone No. +975-2-322753/333296/325402  
Fax: +975-2-323069  
[www.nsb.gov.bt](http://www.nsb.gov.bt)**