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Human Development Indicators: Analysis of Current Situation Using the BLSS

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ABBREVIATIONS AND ACRONYMS

ALMP	Active labor Market Program
BHU	Basic Health Unit
BLSS	Bhutan Living Standard Survey
FYP	Five Year Plan
GRE	Gross Enrollment Rates
ILO	International Labour Organization
MDG	Millennium Development Goal
MMR	Maternal Mortality Rate
MOE	Ministry of Education
MOH	Ministry of Health
MOF	Ministry of Finance
MOL	Ministry of Labour
NER	Net Enrollment Rates
NFE	Non Formal Education
NPPF	National Pension and Provident Fund
PCR	Primary Completion Rates
RGOB	Royal Government of Bhutan
UNDP	United Nations Development Program
UPE	Universal Primary Education
U5M	Under Five Mortality
WFP	World Food Program

Vice President	:	Praful C. Patel
Country Director	:	Alastair McKechnie
Sector Director	:	Julian Schweitzer
Sector Manager	:	Mansoora Rashid
Task Team Leader	:	Corinne Siaens

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PREFACE

This report lays out the challenge of Human Development in Bhutan. It is based on the first nationally-representative household survey, the Bhutan Living Standard Survey (BLSS), collected between April 2003 and June 2003.

Initially, this work was intended to take the form of a Millennium Development Goal (MDG) report, integrated in the series of MDG reports for the South Asia Region. However, after a mission to Thimphu in October 2004, and in consultation with sector and country management, it was decided that the report would become a situation analysis of some human development indicators instead of an MDG report. There were two main reasons for this change in scope. First, Bhutan had already released an MDG report in 2002 in collaboration with UNDP. Second, the BLSS offered new information on some education, health and poverty issues which had not yet been analyzed in the MDG report and the analysis of which was considered useful for informing the Bank's work in Bhutan.

The report's primary objective is to inform the Bank of the current situation regarding some human development indicators. The report is partly filling in the knowledge gap on key human development indicators in Bhutan and will hopefully guide future policy directions. Some sections of the report have already been used as an input for the Country Assistance Strategy (CAS). On the demand side, the Ministry of Education in Bhutan had requested World Bank's assistance to help cost the Education MDG and other sector objectives. This analysis was competed and delivered in Thimphu in January 2005 (and the analysis of the education sector laid out in the first chapter of this report formed an integral part of this presentation). The Ministry of Health did not express interest in the Bank's assistance in the analysis of the health sector using the BLSS data. However, the RGOB did express interest in Bank input addressing old age security and emerging youth unemployment and the report constitutes an initial step informing the dialogue.

The Monitoring and Evaluation unit of the Department of Planning is currently updating the 2002 MDG report with the help of UNDP. It is still possible that the present report can provide some input to this work, though the RGOB has not yet formally requested our assistance.

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EXECUTIVE SUMMARY

Introduction

1.   Bhutan has achieved enormous progress and witnessed unparalleled political, social and economic reforms since its opening to the modern world a few decades ago. Thanks to hydropower, donor support and prudent macroeconomic management, GDP has grown at an average rate of 6 percent a year over the past twenty years. But more important than the prospect for economic growth, the guiding philosophy of the country, "National Happiness", has ensured that the country would respect a natural balance between the creation of material prosperity and the respect of spiritual, cultural and social values. With this vision and deep commitment to human development, Bhutan has expanded access to education, health, information and markets. His Majesty the King has initiated a decentralization process in 1981 whereby the Bhutanese people are always more empowered; a process which will culminate soon when Bhutan becomes a constitutional monarchy. Peace and preservation of the natural resources and cultural heritage have always been among the priorities.

2.   Bhutan now faces many challenges of nation-building and of overcoming the deprivations affecting the lives of the poor. The Ninth Five Year Plan (also accepted as the Poverty Reduction Strategy) lays out a strategy up to 2007 for addressing these challenges with five overriding objectives: (i) Improving quality of life and income, especially of the poor; (ii) Ensuring good governance; (iii) Promoting private sector growth and employment generation; (iv) Preserving and promoting cultural heritage and environment conservation; and (v) Achieving rapid economic growth and transformation. Bhutan's geography, rugged terrain and widely dispersed population, presents a particular challenge for the Government, as it is difficult to facilitate market based job creation and provide quality education and health services in these areas. Another challenge is that statistical capacity has also typically been weak, limited the ability of the Government to monitor progress and provide guidance to policy makers.

3.   The main objective of this report is to inform the Bank on the current state of some human development indicators in the education, health and social sectors in order to better support the Government's efforts in implementing and monitoring its development policy. The report exploits the first nationally representative household survey in Bhutan. It builds on the current and limited literature which includes the 2002 MDG report and the 2004 Report on Poverty and Inequality. Using this data, the report is able to go beyond description and to provide an analysis of the determinants of selected outcomes such as poverty, school enrollment and completion, demand for health care or employment. In particular, the report tries to identify some links between those different sector issues.

Box 1: **The Bhutan Living Standard Survey**

The main source of data used to write this report is the Bhutan Living Standard Survey (BLSS) 2003, conducted by the National Statistical Bureau (NSB) with the support of the Asian Development Bank (ADB). Data was collected between April 2003 and June 2003. The BLSS is the first nationally representative household survey in Bhutan and follows the second Household Income and Expenditure Survey (HIES) of 2000 (the first HIES of 1992 having never been published). The HIES results have always been considered as preliminary because the survey could not fully take the seasonality of consumption into account. The HIES had also collected very few data besides income and consumption. Hence, the broad objective of the BLSS was to collect detailed information about the economic and social conditions of the households. The survey also had as specific objectives to provide useful inputs for the compilation of national accounts, to be a basis for updating the weights of the CPI and to provide inputs in the estimation of the poverty profile for the country and various poverty indicators.

In the absence of census data, the National Statistical Bureau (then CSO) uses a list of households by *gewog* for the entire country which is updated whenever a new fieldwork is done for a particular survey. This type of "administrative census" is less precise as an up-to-date "statistical census".

The different areas were divided into seven strata: four urban strata (Thimphu city, rest of Western, Central and Eastern) and three rural strata (Western, Central and Eastern). The survey is representative at the strata level. Two rural areas, Sarpang and Samdrup Jongkhar were dropped out in the sample due to security reasons.

The sample size for the survey is 4120 households. This sample represents a total extrapolated population of 547,178 people. This figure is an estimate based on the sample frame, which does not cover the whole population of the Kingdom. The population coverage included all households in the country except households of expatriates, residents of hotels, boarding and lodging houses, monasteries including nunneries, school hostels, orphanages, rescue homes, vagrant houses, and under-trail in jails, indoor patients of the hospitals, nursing homes, etc.; and barracks of military and paramilitary forces including the police.

4.	However, this report does not aspire to be a comprehensive analysis of human development in Bhutan. It is also neither a full policy review, nor a detailed strategy for human development. While the coverage of the issues is broad, the focus is on providing a baseline for benchmarking progress in the future. A number of important gaps remain, resulting from lack of data or the desire to avoid duplication. In particular, there is no separate chapter on empowerment, dealing with the institutional framework for decentralization and civil society and community participation. The report also discusses only briefly the issues in setting up a statistical and monitoring system. The source of data for analysis on a particular sector is simply explained in a Box in the corresponding chapter. Despite those limitations, the report provides some of the first piece of household level analytical work on human development, which can help inform our policy dialogue in this area.

5.	To facilitate the use of this report, the evidence presented is linked to policies and strategies. In each chapter, a Box summarizes the main strategies from the Ninth Five Year Plan. At the end of these chapters, we highlight the key results of the findings and emphasize

issues that deserve attention in future research. Furthermore, the conclusion pulls together many of the main messages.

6.   The report is organized as follows. The first chapter describes the education sector and discusses some of its challenges. The second chapter discusses a few issues in the health sector to which the BLSS has brought new information since the publication of the last MDG report and the 2000 Annual Health Survey. The third chapter is an attempt to better identify who is poor or likely to become poor in Bhutan and briefly describes some of the current strategies, formal and informal, to address the difficulties of life. This chapter gives a particular attention to the children, the youth and the elderly.

7.   The key results and main conclusions of the report are described below.

Education

8.   Thanks to the high priority that the RGOB has historically given to education, as reflected by considerable investments and a progressive policy environment, substantial progress has been achieved in school enrollment. Progress is, for instance, visible in the increase in literacy rate from 23 percent to 80 percent for the 55 to 59 years old men, and the 10 to 14 year olds, respectively. The change is even more spectacular for women, whose literacy rates increased from 1 percent to 70 percent for the same age groups. These numbers are also the expression of a significant evolution towards gender equality.

9.   However, the country still faces many challenges in educating its population. Despite progress, entry rates, enrollment rates and completion rates remain relatively low, particularly in rural areas. Primary gross enrollment rate was estimated at 93 percent nationally and at 88 percent in rural areas. Secondary gross enrollment rates are as low as 29 percent in rural areas. Net enrollment rates are considerable lower because of late entry and high repetition rates. The enrollment gap between urban and rural areas is large. Girls still have a lower chance to enter the school system and to receive a secondary education. There are also significant differences in enrollment rates between consumption quintiles, even though education is free. Approximately, only 70 percent of the children who ever started school will ever complete the primary cycle. Drop out is a major issue. School attendance rates are the highest at the age of 11 after which they start to decline. At the age of 15, only 44 percent of the girls and 55 percent of children in rural areas are still in school.

10.   Over-crowdedness and high pupil-teacher ratios are considered to be the most important problem at school. In rural areas, about 37 percent of the primary level students live more than 45 minutes away from the school. Distance to school, however crucial, is not quoted as the main important reason for why children do not attend classes. The main reason is household poverty and the necessity to work. Education is free in Bhutan but poor households need the help of their children for works on the field, in their shops, at home or as domestics. Further, despite public education being free, hidden costs such as uniform, transport and informal boarding arrangements are prohibitive for the poor.

Health

11.   Some data from WHO and from the National Annual Health Bulletins suggest that child malnutrition and child mortality have decreased over the last decade. Reasons for this progress include the expansion of the safe water and sanitation networks as well as the expansion of the immunization coverage.

12.   However, some factors strongly correlated with child health remain weak. First, access to safe water and sanitation is still not universal. According to the BLSS, access to safe drinking water within a distance of 100 meters was estimated to be 98.5 percent in urban areas in 2003, but only 77 percent in rural areas. Access is only 71 percent for the poor. About nine percent of the poor and eight percent of those living in the East do not have access to sanitation. Second, unsafe cooking practices remain and can cause respiratory illnesses, identified as the first cause of child death. For instance, in rural areas, women use wood (86 percent) or gas (8 percent), sometimes on open fires, in poorly ventilated houses. Third, some households are still not aware of the importance of immunization and its coverage is still relatively low. In 2001, only 65 percent of the less than one year olds had received valid doses.

13.   Finally, there are pockets of hunger and malnutrition in the country. Using the BLSS and nutrition conversion factors, it was estimated that about 48 percent of households, most of which live in rural areas, do not meet the minimum caloric requirements (2,124 Kcal). This share is 62 percent in the Eastern region and 73 percent for the poor[1]. Iron deficiency is also a problem in Bhutan, often resulting in anemia. The consumption of fruits and vegetables is also too small relative to international requirements.

14.   The 2002 MDG Progress Report also suggests a decrease in maternal mortality between 1990 and 2000. Monitoring is however very difficult as the majority of the births occur outside of formal institutes and as adequate registration systems are not in place. For example, assistance by skilled personnel is still very low in Bhutan. In rural areas, only 49 percent of the deliveries are medically assisted and only 28 percent of the deliveries occur in a hospital or a maternity. The picture is better in urban areas but even there, a quarter of the deliveries still occur at home without any medical assistance. The share of non-attended deliveries at home is particularly high for the poor; namely at 64 percent. Only 66 percent of pregnant women in rural areas received prenatal care in 2003. Maternal health care indicators are significantly lower in rural than in urban areas.

15.   The RGOB increased the supply of health facilities and programs over the last decade, with a particular focus on rural areas and basic health care. However, despite the increase in absolute numbers, the number of medical staff per person has not increased and the number of hospital beds per person has even decreased. On the demand side, even though health care is almost entirely free in Bhutan, there are still obstacles to utilization of existing health facilities and services. Regressions indicate that distance is an obstacle in rural areas, but it is probably not the only factor explaining why people look or not for medical assistance: poverty and cultural values also play a role.

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[1] This analysis is subject to a number of caveats as the BLSS was not designed for nutrition analysis (see Bhutan Human Development Report, 2005, draft).

Social Protection

16.   *Poverty*. According to the 2004 Report on Poverty and Inequality, the share of the population living under the poverty line in 2003 is 31.7 percent nationally. Poverty is essentially a rural phenomenon: the incidence of poverty is 4 percent in urban areas and 38 percent in rural areas (in which 80 percent of the population lives). Poverty is more prevalent in the eastern part of the country and in some selected districts.

17.   The analysis confirms the importance of a pillar of the Ninth Five Year Plan: access to goods and services.   Controlling for education, employment and other household characteristics, households living in remote areas have an expected level of per capita consumption lower by 9 percent in rural areas and a probability to be hungry higher by 3 percent. Other factors such as the sector of activity or the education level are also associated with poverty. Econometric analysis confirms results from simple correlations: illiteracy or lack of education increases the likelihood to be poor. Households in agriculture are also more likely to have lower levels of per capita consumption, to be poor and hungry.

18.   Currently, the incidence of poverty is similar across all age groups in Bhutan[2]. However, poverty of the household is perhaps most onerous for *children*, who have to forgo school, have to work and face hunger. Nationally, about 11 percent of the households declare suffering from hunger for two or three months per year, mostly in rural areas. The BLSS indicates that some children are employed in the informal as well as in the formal sector, especially in rural areas. In urban areas, the majority of working children are employees in the service sector while, in rural areas, child labor is essentially family work in agriculture. With schools being far away from home and school schedules not being adapted to seasonal obligations, it is extremely difficult for children to combine work and schooling.

19.   The changing demographics of Bhutan, urbanization of the country, and economic developments, also have potential future impact on poverty rates for particular groups, e.g. young adults and the elderly. As the level of education increases in Bhutan—a positive development for the country—and as the new generation leaves the villages in search for white collar jobs, unemployment is rising in urban centers because the private sector is not developing fast enough to absorb this newly educated workforce. This affects mainly the *young adults*. In urban areas, about 11 percent of the 20 to 25 years old men are unemployed and 5.4 percent are looking for work. At present, unemployment of the youth is not necessarily related to poverty as many young men and women still live with their parents. However, continued unemployment will jeopardize their future.

20.   *The elderly* (60 years and above) constitute less than 10 percent of the Bhutanese population but demographic projections suggest that their share will increase overtime. Currently, the elderly live with their extended family. Old age income security in Bhutan is mainly provided through support from the family, with the exception of the National Pension and Provident Fund (NPPF) that covers civil servants and the military and provides an annuity, and a lump-sum payment at retirement. As education, income and urbanization

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[2]Using per capita consumption.

increase in Bhutan, traditional family systems may become less reliable as a source for support and the elderly may increasingly become vulnerable to poverty.

21.   *Coping Strategies*. In the absence of a formal social protection system and safety nets (outside of formal pensions for civil servants), Bhutanese rely on different strategies to cope with the difficulties of life. Inter-household transfers in cash or in kind are one way for Bhutanese to redistribute to those in need, especially from urban to areas. Migration is another strategy to increase one's income and employment possibilities. Nationally, about 12 percent of the population above 15 years of age spends more than a month per year away from the household, probably for work reasons. It seems that those who migrate are more educated than those who do not migrate. The poor, the illiterate and those working in agriculture are less able to take advantage of this coping strategy. Borrowing is another way for households to cope with poverty. About 42 percent of the Bhutanese have access to formal credit. Access is lower but still significant for those at the bottom of the income distribution with only 37 percent having access to private banks credits in the first quintile, against 50 percent in the top quintile. Borrowing from relatives is very common, particularly for the poor.

Conclusion

22.   Bhutan has accomplished tremendous progress on all its human development indicators. The gender gap in education has been reduced, enrolment rates have increased, child and maternal mortality rates have dropped. However, there are more challenges ahead. In education, girls have lower school entry and enrollment rates than boys, early school drop out is a major issue, and literacy rates remain relatively low. In health, some factors correlated to child health are still weak. Access to safe water and sanitation is not universal, unsafe cooking practices persist, awareness towards immunization could be increased and some households do not meet nutritional requirements. Further decrease in maternal mortality is a particular challenge for Bhutan given the difficulty to reach remote households. In rural areas, only two thirds of the women receive prenatal care and half of them deliver at home without medical assistance. In social protection, the report identified some emerging issues. Child labor and hunger do exist in Bhutan. Unemployment is growing in the urban areas, mostly affecting the youth, a result of a large youth cohort, growing number of school graduates, and absence of jobs. Increased urbanization, modernization and break up of traditional support systems, and longer term demographic trends—as the base of the age pyramid shrinks because of decline in the fertility rate—all have the potential to make elderly more vulnerable in the future.

24.   These challenges are interlinked. Poor children are less likely to go to school and to complete their basic education, even when controlling for distance to school, and despite education being free. Those who prematurely drop out of school jeopardize their future; they decrease their expected lifetime income and their likelihood to find a job in urban areas. Later, they may have to withdraw their own children from school, perpetuating in that way poverty from one generation to the next. Poor health is another channel through which poverty is maintained. Poor households face nutrition problems and consume less health services than the non poor, even when controlling for distance to health facilities. This affects

particularly the physical and cognitive development of the children and undermines their future.

25.   The impact of the second hydro-electric power plant is expected to boost economic growth and could decrease the level of poverty to nine percent if income distribution is unchanged. However, there are three concerns in that respect. First, the poor may be less able to benefit from growth than the non-poor. They appear to be less mobile to go to those places where remunerative jobs are created and public services are made available. The poor also have somewhat lower access to credit which may cause inequality to increase, dampening the effect of growth on poverty. Second, the additional income generated by the hydro-power sector may not automatically generate more employment, depending on the labor market structure and the availability of skills. Third, and probably most important, higher growth is not a guarantee for improvements in the education and health sectors. Worldwide experience shows that the recent acceleration in the growth rates of developing countries and the improvement in their macro-economic performance have been accompanied by a decrease in poverty but not necessarily by progress on the other MDGs. This is because the education and health MDGs are most sensible to the issues of service delivery, which are not directly related to growth.

26.   As the country is now embarking in the Tenth Year Plan (2007-2012), several questions remain. How can the objectives in the next Plan be simultaneously stimulating and realistic? How could we increase enrollment rates and improve the quality of education? What is the strategy to improve health outcomes? How should the RGOB prioritize between the needs of numerous vulnerable groups, for instance, the children and the elderly, given the current fiscal constraints? How should one approach the question of migration from rural to urban areas? Should the RGOB encourage settlement in the urban centers or encourage rural communities by making access to services easier for them? What can be done to stimulate the growth of the private sector and create new employment possibilities? How should the government think about formalizing and expanding safety nets for poor to alleviate hunger, or training, entrepreneurship for young unemployed? Should demand-side interventions be designed to help poor households to use education and health facilities? There are many more questions which will require additional research and efforts to strengthen the statistical and monitoring capacities.

27.   To the question "What is the binding constraint for Bhutan?", it is very tempting to answer "Distance to goods and services". This is certainly true in the sense that, all else being equal, households in remote areas are poorer, experience hunger, hardly send their children to school and make less use of health facilities. However, in the short run, it is not clear that decreasing distance to a particular public service will be enough to increase the use of this service and to improve outcomes. Building a school, for instance, will not necessarily increase enrollment rates as there are other factors than distance that keep children out of school. In other words, the condition for an improvement of the human development indicators in Bhutan is simultaneously growth, physical access to services, progress in service delivery, and, consistent with the Ninth Plan, improving the living standards, particularly of the very poor. Fortunately, Bhutan is strongly committed to removing all obstacles to the happiness of its people and one has all the reasons to be hopeful.

CHAPTER 1. EDUCATION

This chapter describes the considerable progress done by the RGOB over the last five decades and discusses some of the challenges still faced by the country. It gives a particular attention to the determinants of schooling. A first section presents the overall profile of the education sector and the objectives of the RGOB. The second and third sections will sequentially present the problems at school and the reasons for not attending classes, as reported in the last household survey. A fourth section will tackle the determinants of schooling using multivariate regressions. The fifth section approaches the question of the returns to education. The sixth section relates to the link between schooling and child labor. The eighth and ninth sections will briefly present the profile of private education expenditure.

I. OVERALL PROFILE AND OBJECTIVES

1.1 **Thanks to the high priority that RGOB has historically given to education, as reflected by considerable investments and a progressive policy environment, substantial progress has been achieved in school enrollment and gender equality**. Enrollment in primary schools has increased at an annual rate of 6-7 percent since 1991. According to the publication of the Ministry of Education, gross enrollment rate has increased from 55 percent in 1991 to 81 percent in 2003. Taking into account the number of children in monastic schools, the gross enrollment rates was even estimated at 82.8 percent in 2003. The net enrollment rate was estimated at 62 percent. The gender gap has substantially decreased; in 2001, girls constituted 46 percent of enrollment across all school levels.

Box 2: **The Ninth Five Year Plan and the Education Sector**

Access to education is a priority for the RGOB. The objectives laid out in the 9FYP are the following:
- Providing support mechanisms for early childhood care (0 to 6 years)
- Increasing primary net enrollment rate to 90-95 percent by 2007
- Enhancing the quality of education comparable to international standards
- Expanding youth guidance and career counseling
- Increasing the basic level from class VIII to X
- Increasing promotion rate from class X to XI from 38 to 56 percent by 2007
- Developing a higher education system under the National University
- Enhancing the literacy rate from 54 percent to 80 percent and establish a system of continuing and life long education opportunities
- Establishing a program of inclusive education for children with disabilities
- Strengthening the education management system with particular emphasis on the school level management
- Developing a more sustainable education system through the introduction of private participation and cost sharing measures.

The Plan also addresses the need to expand vocational education and training.

1.2   **The Royal Government of Bhutan (RGOB) endorsed the Millennium Declaration but its objectives are even more ambitious**. The Millennium Development Goals (MDGs) launched in September 2000 set Universal Primary Education (UPE) as one of the objectives to be reached in 2015. The RGOB endorsed the Millennium Declaration convinced of the relevance of the goals and in-line with its own objectives set prior to the year 2000. In the Ninth Five-Year Plan (9FYP) from 2002-2007, the objective is to enhance primary enrollment rates to 90-95 percent and to achieve full enrolment at Junior High School by the end of the plan period. The objective to be reached at the end of the 10th FYP is full enrollment of high school.

1.3   **Lack of data makes analyzing education indicators over time difficult**. Because the country never conducted a census, there is always considerable uncertainty regarding the population numbers. The denominators for education indicators are therefore estimates only. Even though Net Enrollment Rates have been estimated, the RGOB mainly relies on gross enrollment rates to describe the progress achieved in the education sector. The objectives are also not always well defined, which makes monitoring difficult. For instance, reaching UPE is sometimes understood as having a gross enrollment rate close to 100 percent while in reality UPE should be associated to high net enrollment rates combined with high completion rates. The use of gross enrollment rates is however useful in Bhutan given the difficulty for many children to start schooling at the official age of six years because of long walking distances to school. The absence of repeated cross-section data makes it difficult to monitor progress in the sector. One way to circumvent this issue though is to look at education indicators such as literacy rates, for different age cohorts within the BLSS.

Box 3: Statistical capacity and reporting on education indicators

Education indicators and statistics are reported on a yearly base by the Ministry of Education (MOE). Those reports include gross enrollment, repetition, drop out and promotion rates. They are based on direct reporting by every school. Currently, the MOE's main difficulty to monitor progress in the sector is the absence of a population baseline to which education indicators such as enrollment rates are particularly sensible. For instance, the gross enrollment rate published by the Ministry of Education in its 2003 report was 81 percent while it is estimated at 92.4 percent in the BLSS. Using the National Statistical Bureau's official population baseline of 734,340 for 2003 the gross enrollment rate would only be 68 percent.

Net enrollment rates, entry rates or completion rates are not reported by the MOE. Other official publications sometimes have mentioned a NER of 62 percent or a primary completion rate of 70 percent for 2003 without disaggregating or explaining the methodology and the sources.

The census will be very beneficial to the Education sector and will certainly be an important step in the monitoring and evaluation of Universal Primary Education and other sector objectives.

1.4   **Literacy rates have considerably increased over the last 50 years thanks to the immense efforts towards basic education in the entire Kingdom.** Table 1 indicates literacy rates, as reported during the BLSS survey, in any language, by age and by gender. As a proof

of the remarkable progress, literacy rates for the population aged 10 to 14 is 75.3 percent against only 12.8 percent for the population above 60.

Table 1: Reported literacy rates in any language, by age and gender, 2003

	Male	Female	Total
Total (Aged 6+)	53.9%	32.8%	42.9%
6-9	50.1%	44.9%	47.6%
10-14	80.0%	71.1%	75.3%
15-19	77.5%	58.6%	67.7%
20-24	59.1%	39.2%	48.0%
25-29	58.8%	26.0%	39.5%
30-34	52.3%	18.4%	34.5%
35-39	53.2%	13.9%	31.1%
40-44	43.5%	8.0%	25.6%
45-49	36.3%	4.0%	20.7%
50-54	40.6%	3.5%	21.5%
55-59	23.2%	1.0%	11.7%
60+	22.1%	1.8%	12.8%

Source: BLSS 2003

1.5 **Despite this progress, despite high entry rates into the education system and relatively high enrollment rates, literacy rates are still low**. The BLSS indicates that literacy rates could be lower than what is traditionally believed. According to the BLSS, the reported adult literacy rate is 32.8 percent for women and 53.9 for men and the total adult literacy rate is 42.9 percent. Table 2 provides estimates of literacy rates by consumption quintiles and area. As we can see, there are considerable differences between urban and rural areas as well as between consumption quintiles. Literacy rates increase systematically as the level of household consumption increases. In urban areas, for instance, the literacy rate is only 60 percent for the individuals in the poorest quintiles against 79.6 percent for those in the highest consumption group.

Table 2: Reported literacy rates for children and adults above 6 years in any language, by area and consumption quintile, 2003

	Urban	Rural
Total	70.4%	36.5%
Quintile 1	60.0%	30.2%
Quintile 2	67.5%	32.4%
Quintile 3	69.7%	35.5%
Quintile 4	74.3%	38.4%
Quintile 5	79.6%	45.4%

Source: BLSS 2003

1.6 **The Bhutan Living Standard Survey indicates a gross enrollment rate of 92.6 percent and a net enrollment rate of 69 percent in 2003**. According to the BLSS, the overall net enrollment rate corresponding to the age group of the 6 to 12 year olds is 69 percent and the gross enrollment rate is 92.6 percent. The difference between net and gross enrollment rates is due to two factors. First, many children start schooling later than the

official entry age (six years) because of the long walking distance to the school. Second, repetition rates are relatively high so that older children stay in lower education levels. The discrepancy between gross and net enrollment rates also indicates the need to be very precise when fixing sector objectives. In its five-year plan, what does Bhutan really mean by "full enrollment"? Using gross enrollment rates only as performance indicators can be misleading. Net enrollment rates better reflect the status of the education system than gross enrollment rates but should nevertheless be used simultaneously with completion rates to assess the performance of the system. Further, completing primary education is not necessarily a guarantee that the child has received a good quality education.

Table 3: Entry rates, net and gross enrollment rates by area, gender and levels of schooling, 2003

	National	Urban	Rural	Boys	Girls
Population share	100.0%	19.2%	80.8%	48.1%	51.9%
Entry rate to school*	63.9%	86.7%	58.6%	72.1%	56.5%
	Gross enrollment rates				
Primary	92.6%	109.1%	88.4%	99.6%	85.8%
Secondary	35.9%	66.8%	28.6%	41.2%	31.0%
Low secondary	55.6%	87.2%	47.7%	59.4%	52.3%
Medium secondary	44.7%	77.5%	36.9%	49.1%	39.9%
High secondary	13.0%	39.8%	7.0%	18.9%	8.1%
Superior education	1.7%	4.8%	0.8%	2.0%	1.5%
	Net enrollment rates				
Primary	69.4%	86.4%	65.0%	72.8%	66.2%
Secondary	29.0%	55.9%	22.7%	32.4%	25.9%
Low secondary	13.1%	35.6%	7.4%	12.6%	13.6%
Medium secondary	9.3%	30.0%	4.4%	10.6%	7.9%
High secondary	5.7%	21.7%	2.1%	7.2%	4.4%
Superior education	1.3%	3.3%	0.7%	1.7%	1.0%

Source: BLSS 2003. * Defined as the share of 13 to 19 years children who have attended school at least once in their life.

1.7 **Despite considerable progress, net enrollment rates remain relatively low, especially in rural areas.** The net enrollment rate for primary education, estimated using the BLSS, is 65 percent in rural areas. For low, medium and high secondary levels, it is only 7.4 percent, 4.4 percent and 2.1 percent respectively, in rural areas. Net enrollment rates are higher in urban areas.

Table 4: Entry rates, net and gross enrollment rates by region and levels of schooling.

	Centre	East	West
Population share	26.0%	34.0%	40.0%
Entry rate to school*	61.8%	60.0%	68.9%
	Gross Enrollment		
Primary	88.5%	96.7%	91.8%
Secondary	31.1%	34.1%	40.7%
Low secondary	46.0%	55.3%	63.2%
Medium secondary	44.3%	40.9%	48.5%
High secondary	7.4%	10.9%	18.3%
	Net Enrollment		
Primary	64.3%	74.0%	68.8%
Secondary	25.9%	25.9%	33.9%
Low secondary	8.9%	10.3%	18.8%
Medium secondary	7.5%	5.9%	13.6%
High secondary	3.8%	3.0%	9.2%

Source: BLSS 2003. *Defined as the share of 13 to 19 years children who have attended school at least once in their life.

Figure 1: School attendance, by age and area, 2003
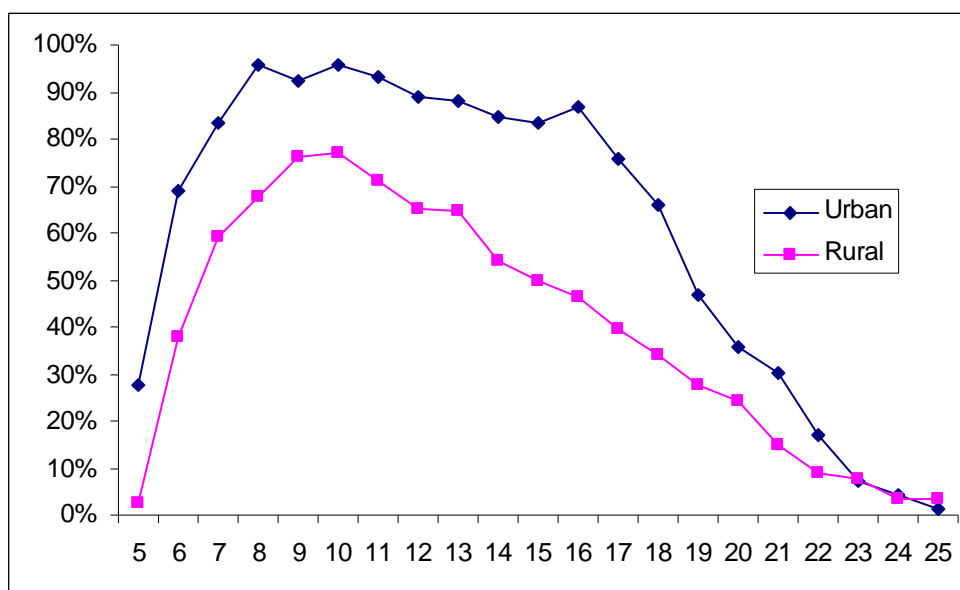
- their preference to the boy. Parents are also reluctant to send their daughters to school for security reasons or for fear of early pregnancy.
- Table I.1 (on page 2) reports entry rates and enrollment rates by gender. The net enrollment rates for primary and secondary levels are respectively 72.8 and 32.4 percent for boys against 66.2 and 25.9 percent for girls. The proportion of children who will never go to school is higher for girls than for boys by 15.6 percentage points. As we can see from Figure 2, school attendance is on average 9.5 percentage points higher for boys than for girls. The difference is wider for the age group 15-18.
- In some cases, parents believe that Non Formal Education (NFE) is sufficient for girls. NFE provides basic reading, writing and numeric skills. It is less costly and more flexible since it allows girls to attend classes in the evening when all the household chores have been accomplished. Sometimes, NFE takes the form of a mobile teaching unit, which goes from one village to the other, and is seen as an attractive alternative to schools for very remote areas.

Figure 2: School attendance, by age and gender, Bhutan 2003
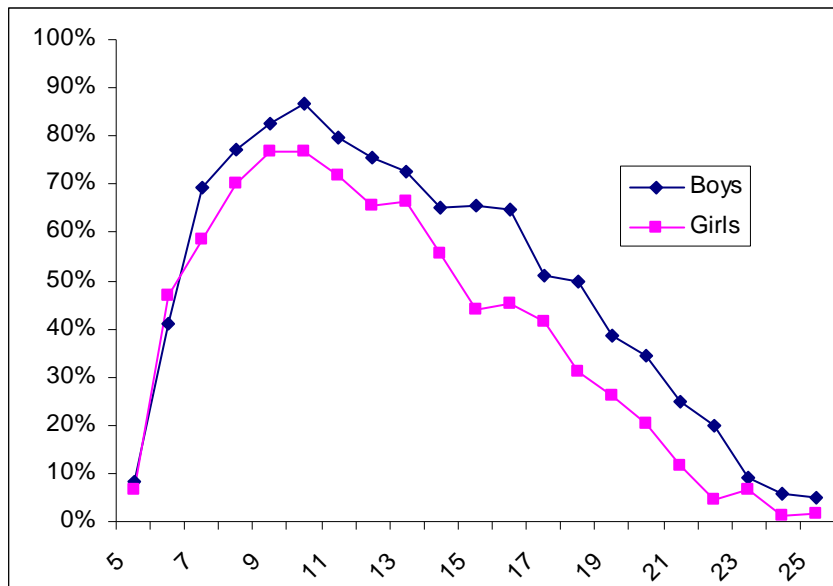
Table 5: Entry rates, net and gross enrollment rates by consumption quintiles and levels of schooling

	Q1	Q2	Q3	Q4	Q5
Entry rate to school*	54.0%	59.5%	62.7%	69.3%	76.1%
	Net enrollment rates				
Primary	62.2%	62.5%	70.0%	75.7%	81.1%
Secondary	21.7%	23.8%	28.4%	31.0%	41.8%
Low secondary	6.1%	9.7%	15.9%	15.1%	21.2%
Medium secondary	3.6%	6.1%	10.4%	11.4%	15.7%
High secondary	2.3%	3.1%	6.8%	7.6%	9.2%
	Gross enrollment rates				
Primary	82.6%	86.7%	90.3%	102.0%	106.6%
Secondary	26.7%	27.9%	37.1%	38.1%	52.0%
Low secondary	40.3%	48.6%	61.9%	56.5%	76.8%
Medium secondary	37.4%	31.7%	40.8%	47.9%	69.3%
High secondary	7.3%	7.3%	15.0%	15.2%	21.2%

Source: BLSS 2003. * Defined as the share of 13 to 19 years children who have attended school at least once in their life. Quintiles are defined separately for urban and rural areas.

1.10 **Early drop out constitutes a major problem, especially for girls and children living in rural areas**. As shown in Table 6, school attendance rates are the highest for children at the age of 11, after which they progressively decrease, especially in urban areas. This is particularly worrying because no child is able to complete the primary cycle at the age of 11 (unless the child started school at the age of 5). Drop out accelerates after the age of 16, which corresponds to the transition to higher secondary education[3]. This is particularly visible in urban areas, as shown in Figure 1. The 2003 UNICEF report on the status of access to primary education of the girl indicates that drop-out rates are relatively similar for boys and girls at the primary level, but girls seem to perform less well than boys later on. In particular, girls do less well than boys on the selection exams towards higher secondary education. One of the reasons could be that girls have less time at home than boys to study because parents impose more household chores on them than on boys. More will be said about the potential reasons for the gender difference in the section devoted to the reasons for drop-out.

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[3] In Bhutan, free education is provided to anybody until grade 10, which corresponds to the end of the medium secondary level. In order to be admitted in a free, public high secondary school, students must take tests and compete because the number of seats is limited.

Table 6: School attendance and share of students in right level for their age, by area, gender and age groups, 2003

	6 to 12	13-14	15-16	17-19	13-19	>=20
			URBAN			
School	88.9%	86.5%	85.0%	62.8%	77.3%	15.3%
Right level	86.4%	35.6%	30.0%	21.7%	55.9%	6.7%
			RURAL			
School	65.3%	59.5%	48.2%	34.4%	46.3%	10.6%
Right level	65.0%	7.4%	4.4%	2.1%	22.7%	8.2%
			BOYS			
School	73.5%	69.0%	65.2%	47.3%	59.8%	17.0%
Right level	72.8%	12.6%	10.6%	7.2%	32.4%	11.5%
			Girls			
School	67.1%	61.3%	44.6%	33.1%	45.3%	7.5%
Right level	66.2%	13.6%	7.9%	4.4%	25.9%	5.1%

Source: BLSS 2003.

1.11 **Children rarely complete primary education on time and some children never complete the cycle, especially in rural areas. Completion rates seem higher for girls than for boys.** Many children drop out of school even before having completed the primary cycle, especially in rural areas. Table 7 indicates completion rates by gender and area. Primary completion is defined as the share of children having started school who actually completed primary education. Because the age at which children may complete primary school varies a lot in Bhutan, Table 7 reports primary completion rates for different age groups. On-time completion would relate to the 13 to 15 years old and is relatively low, but completion at older ages is as high as 90 percent in urban areas. Rural areas always lag behind with a completion rate not higher than 73 percent. Very interestingly, girls seem to have higher completion rates as boys.

Table 7: Primary completion rates by age group, area and gender

	National	Urban	Rural	Boys	Girls
13-15	31.2%	54.9%	23.0%	29.3%	33.4%
13-17	44.0%	66.3%	36.1%	41.7%	46.7%
15-19	67.4%	85.8%	60.9%	65.9%	69.2%
17-21	77.4%	90.1%	72.7%	78.1%	76.7%
19-23	75.0%	89.0%	68.2%	74.2%	75.9%

Source: BLSS 2003.

1.12 **Repetition rates are very high. Boys tend to repeat more than girls.** The MOE reports a decrease in repetition rates for class 1 from 15.1 percent in 1997 to 11 percent in 2004. Despite this slight progress, repetition remains a problem in Bhutan. According to the same report, the incidence of repetition seems particularly high in the districts of Trashiyangtse and lowest in Ha although the information could be biased because of the small sample size in those two districts. Repetition rates also vary by grade. They tend to be the highest for grade I as teachers want to make sure students acquire basic skills before progressing in the education system. Repetition rates also tend to be higher in grade IV. This may be explained by several different factors. One factor is that many children from remote

and community schools are admitted in grade IV in better schools usually with boarding facility. Those children may have difficulties in adjusting to another environment or the absence of their parents as well to other teaching methods. Class IV is also the moment where science and social studies are introduced in the program. This may also create difficulties. Repetition can be one way to remedy the sometimes low quality of the education system. Slow learners do not receive sufficient attention because of the high pupil-teacher ratio and need to repeat to learn the material. Still according to the same report, teacher absenteeism also results in repetition when teachers rush at the end of the year to cover the curriculum, without making sure students have assimilated the program. Repetition rates for boys and girls are respectively 15.5 and 14.7 percent, but this does not mean girls perform better than boys. The consequences of failure may simply be different for boys and girls. Failure for girls seems to result in drop-out as parents tend to believe that education is less pertinent for girls (UNICEF, 2003). When boys fail parents are more willing to make the necessary financial arrangements for boys to repeat than for girls.

1.13 **Due to late entry and repetition, age for grade is relatively high in Bhutan, even in urban areas**. The share of children who are not in the right education level for their age is relatively high in Bhutan, even for levels such as low secondary. For instance, while 86.5 (59.5) percent of the 13-14 years old children go to school in urban (rural) areas, only 35.6 (7.4) percent of them are enrolled in the 7th and 8th grades. The remaining children are still in primary levels. The share of children who are not in the right grade for their age is higher for boys than for girls. In its 2002 report, UNICEF indicates teachers do not seem to be sufficiently trained to deal with multi-age grades. This would have consequences on learning outcomes.

II. SUPPLY SIDE: WHAT ARE THE PROBLEMS AT SCHOOL?

1.14 **Over-crowdedness and high pupil-teacher ratios are considered to be the most important problem at school.** Considerably high pupil-teacher ratios and overcrowded classrooms are seen as the most important problem for children at school, especially in urban areas. About 45 percent of the primary school children complain about the pupil teacher ratio in urban areas and 14 percent of them complain about classrooms size. This problem is still only slightly less important for older children and for rural children.

1.15 **More than a third of the enrolled students live far from the school.** In urban areas about 14 percent of the children enrolled in primary grades live more than 30 minutes away from the school. This percentage is 16, 21 and 23 for children enrolled in respectively low, medium and high secondary levels. Distance is obviously more problematic in rural areas; about 37 percent of the primary level students live more than 45 minutes away from the school. In rural areas though, travel time to school decreases as children move to higher grades, probably because older children rely more on boarding schools. Table 50, Table 51 and Table 52 in the Annex report those results by age instead of by level, and by area, gender and consumption quintiles respectively.

116   **Surprisingly, the prevalence of teacher absenteeism seems high in both urban and rural areas**. Very surprisingly, about 19 percent of primary school children complain about teacher absenteeism. Teacher absenteeism, contrary to the situation in most countries in the region, had never been perceived as an issue in Bhutan so that this result should be treated with caution. The way households understood the question "Are the teachers often absent?" may be different than what is usually understood by teacher absenteeism. The problem might not be that teachers do not show up at school but that teachers often have to leave their class to teach another class in the same school. The problem seems somehow less severe as children move up to higher grades, but absenteeism remains a concern across all cycles. Still regarding teachers, some children complain about teacher quality, and more so in higher cycles. This might be because curriculum becomes more difficult when grades increase so that it is also more difficult to train teachers for those grades.

1.17   **Private higher secondary schools seem to experience less teacher absenteeism but otherwise suffer from over-crowdedness as much as public schools**. Fewer students complain about teacher absenteeism in private higher secondary schools than in public higher secondary schools (11.4 against 19 percent). Satisfaction rates towards toilets and book supply is also higher in private schools. Otherwise problems of overcapacity, irrelevance of the program, teacher qualification and boarding facilities are even higher for private schools. The reporting of satisfaction though is a subjective assessment so that private students may simply be more demanding than public ones, which makes comparison between the two types of schools difficult.

Table 8: Problems at school, by education level, area and public/private (in percent)

	Primary			Low secondary		
	National	Urban	Rural	National	Urban	Rural
School is far*	31	14	37	26.7	15.9	31.7
Teachers absent	19	18	19	16.4	18.0	15.7
Teachers not competent	5	8	4	6.3	8.9	5.2
Books/supplies insufficient	4	4	4	3.3	4.5	2.7
Program irrelevant	2	2	2	2.8	4.0	2.3
Pupil/teacher ratio too high	40	45	38	36.3	40.8	34.2
Classrooms too small	13	14	12	12.7	12.3	12.9
Toilets bad	16	20	14	12.6	15.9	11.1
Boarding unsatisfactory	12	18	11	5.7	17.2	4.1
	Medium secondary			High secondary		
	National	Urban	Rural	National	Public	Private
School is far*	27.1	21.1	30.1	23.2	22.4	24.9
Teachers absent	16.0	15.9	16.1	16.7	19.0	11.4
Teachers not competent	9.9	7.6	11.0	7.7	6.3	10.9
Books/supplies insufficient	3.4	4.6	2.8	3.9	4.6	2.3
Program irrelevant	2.2	2.1	2.2	2.0	1.3	3.8
Pupil/teacher ratio too high	40.1	40.3	40.1	42.7	42.9	42.3
Classrooms too small	8.7	10.7	7.7	9.3	8.1	12.0
Toilets bad	12.0	14.8	10.6	9.9	11.4	6.7
Boarding unsatisfactory	3.7	13.5	1.7	6.7	6.0	12.1

Source: BLSS 2003. * Defined as more than 30 minutes travel time from home to school in urban areas and more than 45 minutes in rural areas.

III. DEMAND SIDE: REASONS FOR NOT ATTENDING CLASSES

1.18 **The main reason for not going to school is by far household poverty**. Table 9 provides reasons for not going to school for children between 7 and 17 years old. Even though education is free for all up to grade 10, the hidden costs of schooling seem to be prohibitive for many children. In urban areas, 53.1 percent of the 6-12 years old children cannot afford primary education. This does not even include the opportunity cost of schooling which is itself a reason for not going to school for only 3.1 percent of the 6 to 12 years old and 5.7 percent of the 17 to 19 years old, in urban areas. In rural areas, the share of 6 to 12 years old who cannot afford school is only 27.2 percent but the necessity to work for them is as high as 13 percent. The percentages for the 17 to 19 years old are respectively 21.8 and 23.4 percent. These results on the primacy of economic factors for schooling reinforce findings from previous studies such as the 2002 UNICEF report on the factors affecting enrolment, repetition and drop out of the primary school age children in Bhutan.

1.19 **Distance to school is an obstacle for about 7 percent of the children in rural areas**. As reported in Table 9, about 8.5 percent of the 6 to 12 years old in rural areas do not go to school because of the long distance. Distance becomes less of a problem as children grow up because boarding facilities become an option. Some children in urban areas, especially the eldest ones, also report distance as a reason for not going to school. Distance and economic motives are obviously interrelated in the sense that shorter distances to school would make school and work compatible for many children. In other words, some children who report the need to work as a reason for not going to school might go to school if distances were shorter. Nevertheless, the fact that more children quote the need to work as the main reason for no schooling tells something about the relative importance of both distance and economic reasons.

Table 9: Reasons for not going to school, by age and area

	6 to 12	13-14	15-16	17-19	13-19
			URBAN		
Not interested	3.4	9.3	8.0	12.7	9.6
Cannot afford	53.1	47.3	53.0	41.5	48.1
Needs to work	3.1	1.5	6.1	5.7	4.2
Did not qualify	8.1	3.1	3.5	5.8	3.9
School is too far	2.0	2.6	4.3	7.7	4.5
Illness	6.0	8.6	3.4	1.3	4.9
Too young/old	8.4	0.0	0.0	0.0	0.0
Problems in home	6.8	16.0	13.3	7.9	13.1
Other	9.1	11.5	8.4	17.4	11.7
			RURAL		
Not interested	7.7	8.1	11.1	12.3	10.3
Cannot afford	27.2	28.9	23.4	21.8	25.0
Needs to work	13.0	22.6	23.8	23.4	23.3
Did not qualify	8.5	2.9	3.5	5.0	3.7
School is too far	8.8	6.1	6.7	5.4	6.2
Illness	3.1	2.3	1.6	1.5	1.8
Too young/old	7.1	1.0	4.0	1.5	2.3

Problems in home	6.4	14.9	10.4	13.9	12.8
Other	18.2	13.3	15.5	15.3	14.7

Source: BLSS 2003.

1.20 **Other demand side factors such as problems at home also explain why many children can not attend classes. Girls are more vulnerable to household difficulties**. About 13 percent of the 13 to 19 years old cannot go to school because of problems at home. This concerns girls (13.6 percent) more than boys (11.6 percent). The need to work is also more prevalent, almost twice as much, as a reason for no schooling for girls than for boys.

1.21 **Lack of interest in schooling and failure as a reason for not going to school are more prevalent among boys**. Lack of interest is relatively high among boys; it amounts to 9.6 percent for the primary age children to 19 percent for the 17 years old. For boys, failure is also quoted in about 7 percent of the cases. This is less visible for girls. It would be interesting to relate this observation to the fact that girls are less successful than boys in the selection for high secondary schools. Lack of interest is less crucial for girls than for boys and still the pass rates to grade 11 for girls are lower. And even if pass rates are lower for girls, they still perceive other reasons than failure to be important. Unfortunately, the reasons for not attending school are only reported by children up to the age of 17 (age at which very few students have yet attained grade 10) so that it is difficult to establish a link between those reasons and the selection into grade 11. Table 53 in the Annex reports the reasons for not going to school by consumption quintile.

Table 10 Reasons for not going to school, by age and gender

	6 to 12	13-14	15-16	17	13-17
			BOYS		
Not interested	9.6	11.5	16.2	18.7	15.1
Cannot afford	26.9	26.7	24.1	22.0	24.5
Needs to work	8.0	16.6	20.9	14.8	18.0
Did not qualify	8.5	5.8	4.2	5.9	5.2
School is too far	8.5	7.6	6.2	7.3	7.0
Illness	2.9	1.1	3.8	1.9	2.4
Too young/old	10.2	0.9	8.3	3.4	4.5
Problems in home	3.5	14.6	6.8	15.5	11.6
Other	21.9	15.2	9.5	10.6	11.8
			GIRLS		
Not interested	5.9	6.0	7.5	7.9	7.0
Cannot afford	30.2	32.8	26.3	24.2	28.1
Needs to work	15.1	23.6	23.7	27.0	24.4
Did not qualify	8.4	1.0	3.1	4.6	2.7
School is too far	8.3	4.6	6.7	4.4	5.4
Illness	3.5	4.0	0.4	1.1	1.8
Too young/old	5.5	0.9	0.8	0.0	0.6
Problems in home	8.3	15.3	13.0	12.0	13.6
Other	14.8	11.8	18.6	18.9	16.2

Source: BLSS 2003.

IV. DETERMINANTS OF SCHOOL ATTENDANCE AND PRIMARY SCHOOL COMPLETION

1.22 **Determinants of school attendance and school completion can be analyzed with more precision using multivariate models because such models control for variables which may be simultaneously associated with schooling outcomes**. Let's say that school enrollment is observed to be lower for children in a specific region. Is it because children in that region are poorer, is it because access to school is more difficult there, or is it for any other reason specifically linked to that particular region? Multivariate models allow estimating the marginal impact of a variable on the probability of schooling or completion while controlling for all the other variables. Estimating econometrically the determinants of schooling is important as it will allow better defining action and programs. The caveat is that not all variables which have an impact on schooling are measurable or available so that caution is still needed when interpreting the results. The language of instruction for instance is supposed to have a considerable impact on learning outcomes, repetition and completion but this information is not available in the household survey. Separate models are run for rural and urban areas because the determinants of schooling are fundamentally different in each area.

1.23 **The analysis reveals that many factors affect the probability of going to school and of completing primary school.** Table 54 in Annex provides the results (obtained using probit regressions).

- *Age of the child*: As was already evident in Figure 1 and Figure 2, the relationship between enrollment and the age of the child is an inverted-U. Older children are more likely to go to school due to late entry in primary school and low enrollment rates in preschools, but only up to a certain point, due to low transition rates from primary to higher levels of schooling.

- *Structure of the household*: The impact of the household size is not clear. On the one hand, when household size increases, the domestic chores and other work can be split between the numerous family members, allowing for some children to go to school but, on the other hand, larger families may also have more needs and can maybe not afford sending the children to school. This may be why the impact of one additional child is sometimes positive, sometimes negative and most of the time insignificant. Rural households with female heads are more likely to send the children to school. This result is a bit surprising given the fact that the male spouse is absent, which often imposes more responsibilities on the children, but the same phenomenon was nevertheless observed in other countries. This result may find its place in the literature about the impact of gender roles and "bargaining power" on the children's well being. No impact of female headship is nevertheless observed on the probability of schooling in urban areas or on the probability to complete primary school. When the household head is older, the probability of going to school for children from 13 to 19 is higher by 3.5 percent in urban areas but no impact is observed in rural areas. The probability for those children to complete primary education is higher by 2.4 percent in urban areas. This is maybe a sign for the greater vulnerability of younger households.

- *Orphanage*: In urban areas, about 5 percent and 3.1 percent of the children between 3 and 19 years old lost their father or mother. The percentages rise to respectively 7 and

4 percent in rural areas. Children who lose their father or mother are more vulnerable than other children of the same age and characteristics. For instance, probability of schooling for the 13 to 19 years is lower by 14 and 12 percent in urban and rural areas respectively when the mother has died.

- *Migration and nationality*: The absence of the head for periods longer than two months does not seem to have an impact on schooling and neither does the nationality of the household head in urban areas[4].

- *Education of the head and spouse*: Controlling for wealth, location and other household characteristics, children living in households where the head is better educated are more likely to be in school. This is because educated parents may be more aware of the value of education and more able to support their children, with their home works for instance. Given the very recent character of modern education in Bhutan, few parents have themselves been to school and illiteracy rate is very high, especially among the mothers. Generally speaking though it seems parents are usually convinced of the importance of education. Indeed, in households where the head is literate, the probability of completing primary school is higher by 7.5 percent in urban areas. An additional year of education for the household head, controlling for literacy, increases the probability of schooling for the 13 to19 years old or the probability of ever going to school by about 6 percent in rural areas, and it increases the probability of completing primary school by 3 percent in urban areas. The impact of the education of the spouse on the probability of schooling and completion seems to be statistically insignificant.

- *Employment of the head*: Children in households whose head works as an employee or independently have a higher probability of going to school in urban areas, relative to households where the head is a family worker, member of a cooperative or a collective farmer. Children aged 6 to 12 in rural households with a head in agriculture (as opposed to industry or services) have a lower probability of being enrolled in school, which may denote the work requirement of farming.

- *Geographic location*: Controlling for child and household characteristics, children in some regions are more likely to go to school than children in other regions. Living in the eastern part of the country, for instance, increases the likelihood of going to school for the 6 to 12 years old children by 21 percent in rural areas, relative to children who live in the centre. By contrast, the impact on primary school completion of living in the West is rather negative (except for primary education in urban areas). Those results are surprising as the East is the poorest region in Bhutan and the West the richest region. The explanation must be found in the fact that the regressions control for distance to school, household consumption and all other variables, which can have an impact on schooling.

1.24 **Electricity and heating at home can both be determinants for schooling**. Children living in households with electricity have a higher probability to be enrolled of about 13 percent in rural areas. In urban areas, the impact on school attendance for children between 13 and 19 is about 17 percent and the probability to complete primary school is higher by 23 percent. This is because without electricity, children can not do their home work after school,

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[4] The sample is almost exclusively from Bhutanese nationality in rural areas; hence this variable was not used in the regression.

which might result in failure and eventually in drop out. In households without heating in urban areas, children have a lower chance to complete primary school. They have a higher chance to go to school though but this might be because parents may want to send their children to a warmer place than having them staying in a cold house. No impact is observed in rural areas.

1.25 **The probability of schooling is higher for boys than for girls but the probability of completing primary school is the same for both genders**. Controlling for economic status, remoteness and other variables, boys have a higher chance to go to school in both urban and rural areas. In rural areas for instance, this probability is higher by 12 for young children and by 17.7 percent for the 13 to 19 years old. Table 55 in the Annex reveals that the probability of entering the school system ever is 8.6 percent higher for boys than for girls in urban areas and 21 percent higher in rural areas. Nevertheless, once in the school system, boys and girls have the same likelihood to complete primary school and also to be enrolled in secondary grades.

1.26 **Teacher absenteeism discourages children from schooling**. A measure of teacher absenteeism was estimated as the leave-out-mean share of children who declared this problem of absenteeism in the primary sampling unit. The higher this problem is in the area, the lower the probability of schooling and of completing primary school. The negative impact is particularly strong in rural areas. Other measures of school quality were estimated using information on availability of books, toilet facilities, relevance of programs, teacher competence, pupil-teacher ratio and classroom space. The impact of those is not clear. Overcrowded classrooms, which is known to be a problem, has even a positive coefficient. There may be an endogeneity problem here: this ratio is high because children go to school and not the opposite. By contrast, it is more difficult to explain why children in areas where school program is judged irrelevant are sometimes more likely to go to school. It may be related to unemployment issues. In areas with high unemployment, schooling may seem less relevant but work opportunities are also scarce so that the opportunity cost of schooling may also be lower?

1.27 **Remoteness also has an impact on the probability of enrollment and completion.** The direct impact of distance to school can unfortunately not be analyzed because information on distance to school is only available for children already enrolled. A factor analysis was conducted to estimate an index of remoteness for each household using information on distance to several facilities and public service such as telephone, post office, BHU, Dzongkhag headquarters, tarred road, feeder road, bus station, etc. Results are very clear: the more remote the household, the smaller the probability to go to school at any age, and the smaller the probability to complete primary school.

1.28 **The existence of a boarding facility in the block increases the probability of schooling.** The existence of a boarding facility in the block increases the probability of going to school at all ages as well as the probability to enroll in secondary education. This result holds in both urban and in rural areas. Boarding facilities are especially crucial for girls as parents are more reluctant to send girls walking long distances to schools than boys. For many parents, indeed, the lack of security on the way to the school is a major obstacle to girls'

enrollment. This includes in particular the fear of early pregnancies. A report written by UNICEF in 2003 on the "Status of Access to Primary Education of the Girls Child in Bhutan" indicates that sometimes it is not placement in the school, which is a problem to enroll a child but rather to have a seat in the boarding facility. "When children do not qualify for a seat in a boarding school it means extra cost for the parents to make informal boarding arrangements". In its "Education Sector Strategy", which was written to help realizing Bhutan's vision for 2020, the extensive dependence on boarding is said to be reduced by establishing additional smaller schools in remote communities. This strategy would essentially be guided by financial considerations as community schools are less expensive than boarding facilities. This may nevertheless turn out to be a wrong calculus if population in remote areas becomes even lower in the long run as a result of migration and demographic decline. By contrast, boarding schools can not be an alternative to community schools for very young children as they still need their parents and their protection.

1.29 **Location is not the only determinant of schooling; poverty also matters**. Controlling for remoteness and other household characteristics, economic well-being as measured by consumption proves to be a very strong determinant of education, particularly in rural areas. Children from wealthier households have a higher likelihood to attend classes and to enroll in secondary education. The utility of multivariate regressions is very clear here. While mean statistics presented in Table 5 had already pointed out to the difference in enrollment rates across quintiles, such statistics can not differentiate between the "economic" effect and the "location" effect. In other words, poorer children may go less to school simply because they live far from the schools. By controlling for remoteness, other household characteristics and quality of schooling, the multivariate model presented in Table I.10 makes clear that poverty as such has a strong impact on schooling in rural areas. The impact of poverty is not as clear in urban areas. Richer households have a higher chance of sending their young children to school but there does not seem to be any impact for the 13 to 19 years old: poorer children do not seem to have a lower probability to go to school or to complete primary school.

V. RETURNS TO EDUCATION

1.30 **Returns to education guide parents in their decision to send their children to school**. In their decision to send their children to school parents compare the cost of schooling (including the opportunity cost) with the benefits of schooling. Monetary benefits of education are certainly not the only benefits but certainly constitute an important factor in the schooling decision. Parents and children will be little motivated to attend classes if returns to education are very low.

1.31 **Proper returns to education can not be estimated in the absence of an income measure in the household survey but the impact on the household head and spouse's education levels on per capita consumption gives an indication of what the gains of education may be.** Linear regressions were estimated where the dependent variable is the logarithm of per capita nominal consumption adjusted by a regional price index. Apart from a constant, the regressors include: (a) household size variables and their square (number of infants, children, and adults), whether the household head is a woman, the age of the head and

its square, whether the head has a spouse or not, and the migration status of the; (b) characteristics of the household head and spouse, including his/her level of education; whether he/she is employed, unemployed and searching for work, or not working; his/her sector of activity; his/her position; (c) geographic location according to Bhutan's 3 geographical regions; and finally the time to various services. Categorical regressions for the probability of being poor or the probability of suffering from hunger were also estimated but this section is mostly based on the results following the linear regressions. Table 60 in Annex 3 reports the results.

1.32 **In urban areas, the gains from literacy, medium and high secondary and superior education are substantial but the gains from other basic education (primary and low secondary) are not**. According to the estimates provided by Table 60 for urban areas, a household with a literate head has an expected level of consumption that is approximately 22 percent higher than that of a household with an illiterate head. However, basic education of the head (primary and low secondary education) does not seem to have a significant impact on the household's per capita consumption as compared to households with a head having no education. By contrast, our estimates indicate that medium, high secondary and superior education levels are important determinants of per capita consumption improvement. As suggested by Table 60, urban households with a head having acquired some high secondary education have expected consumption levels which are higher than those of households with a head having no education by approximately 42 percent. Finally, in urban areas the returns to high secondary education are considerably higher than the returns to lower secondary levels.

1.33 **In rural areas, the gains from literacy and secondary are substantial but the gains from primary education are not.** According to the estimates provided by Table 60, a household with a literate head has an expected level of consumption that is approximately 6 percent higher than that of a household with an illiterate head (but it is only significant at a 13 percent level). Also, as indicated by our estimates, rural heads which are literate are less likely to feel hungry. Returns to education in rural areas seem to have about the same general pattern as in urban areas. First, what really matters is literacy and not so much schooling as such, unless the child is able to receive some secondary education. If parents think that it is unlikely that the child will attend secondary school, they may as well choose the option of Non Formal Education (NFE). In their eyes, NFE has the advantage of being more flexible, cheaper and provides the child with the minimum literacy and numeric skills. The importance of NFE for children in rural areas, in particular for girls, was highlighted in the 2003 UNICEF report on the Status of Access to Primary Education of the Girls Child. NFE should certainly not be considered as an ideal alternative to educate children, the main reason being that teaching methods for adults and children are different. However, the attraction of flexible schools should be kept in mind when designing an Education Policy, which is concerned by the children from poor households and remote areas. Returns to superior education seem to be low in rural areas, probably because of the lack of employment possibilities to valorize this type of education.

VI. PRIVATE EDUCATION EXPENDITURE

1.34 **Education is free in Bhutan but hidden costs can be prohibitive for poor households**. Even though public education is entirely free up to grade 12, the cost of schooling can be prohibitive for some households, as we saw in the section devoted to the reasons for no schooling. For poor households, not only the opportunity cost of schooling can be very high (especially when the school is several hours away from home) but other costs such as uniforms can be a burden. Using the BLSS, it was estimated that costs in the category "other", which include uniforms, constitute about 2.2 percent of the budget of a poor family and 1.5 percent of the budget of a rural family. The shares of the different types of education expenditure are reported in Table 11. Those amounts may seem very little but might be an obstacle for some households; at least this is what some of them report in the survey. Another cost which was not captured in the survey is the informal boarding arrangement when a child is not selected for a seat in a boarding school. For children who were not selected for public high secondary education, parents must pay the higher fees of a private school, but this regards almost exclusively urban or non-poor households. Private tuition, private schooling and public transport from or to school are privileges of the rich, as indicated by value above 1 for the Gini coefficient of those expenditure categories.

Table 11: Share of education expenditure in total consumption (in percent) and Gini Income Elasticity.

	Yes*	National		Urban		Rural		Poor		Non Poor	
		Share	GIE	Share	GIE	Share	GIE	Share	GIE	Share	GIE
Public education											
Token fee, school dvpt. Fund	60.7	0.2	0.70	0.4	0.56	0.2	0.21	0.3	0.39	0.2	0.70
Boarding fees	13.6	0.1	0.58	0.0	1.10	0.1	0.67	0.2	0.29	0.1	0.73
Books, supplies	36.0	0.2	0.98	0.4	0.24	0.2	0.92	0.2	1.31	0.2	0.84
Private tutoring	0.4	0.0	1.97	0.0	1.50	0.0	2.42	0.0	5.87	0.0	2.09
Public transport	4.1	0.0	1.27	0.1	1.00	0.0	1.20	0.0	-0.65	0.0	1.29
Other (uniforms …)	63.5	1.3	0.50	1.0	0.19	1.5	0.56	2.2	0.48	1.2	0.44
Total public education		1.9	-	1.9	-	2.0	-	2.9	-	1.8	-
Private education	3.7	0.8	1.96	2.3	1.72	0.1	1.14	0.1	4.87	0.9	2.14
Total Education		2.8	0.41	4.2	0.37	2.1	0.38	3.0	0.12	2.7	0.35

Source: BLSS 2003. * Yes: share of households with positive expenditure (population weighted), in percent.

VI. SUMMARY

1.35 The RGOB has achieved remarkable progress since the adoption of a modern education system in the early 60s. This progress is visible, for instance, in the significant increase in literacy rates. However, more efforts will be necessary before Universal Primary Education can be achieved, let alone Universal Secondary Education. Some of the objectives stated in the Ninth Five Year Plan seem too optimistic. Entry rates, enrollment rates and completion rates are still low, especially in rural areas. Early drop out constitutes a major problem, especially for girls and children in rural areas.

1.36   Enrollment and completion rates are lower for households in the bottom of the distribution. This is not only because poor households live in remote areas: controlling for geographic location, remoteness and other household characteristics, wealth proves to be a very strong determinant of education, particularly in rural areas. Children from wealthier households have a higher likelihood to attend classes. In fact, in the BLSS, the most important reasons for not attending school are financial reasons and the necessity to work.

1.37   Monitoring progress in the education sector has been constrained by the absence of population data. The new census will be very useful to strengthen the sector analysis and bring a consensus on the level of the education indicators. The reasons for child labor and premature school drop out must be further examined and addressed if the RGOB wants to meet its education sector objectives and give to every child a chance to be educated. Building more schools is probably necessary but may not be sufficient to attain Universal Primary Education.

CHAPTER 2. HEALTH

This chapter discusses a few issues in the health sector to which the BLSS has brought new information since the publication of the last MDG report and the 2000 Annual Health Survey. A first section investigates some factors correlated to child health. A second section relates to maternal and reproductive health. The third section tackles nutritional issues. The last section approaches the questions of supply and demand of public health services.

I. CHILD HEALTH

2.1 **Child mortality has decreased by half over the last two decades.** Infant mortality has significantly decreased from 102.8 to 60.5 between 1984 and 2000, and under-five mortality (U5M) from 162.4 to 84 over the same period. However, infant and under-five mortality rates are, for instance, not much lower in Nepal (where infant mortality was 64 and under-five mortality was 91 per 1,000 births in 2001), while Nepal's per capita GDP is about one fourth of Bhutan's GDP. Bhutan also has a lower performance than Bolivia, a country in the same range of per capita GDP and similar geography. The MDG objective of "reducing by two-thirds, between 1990 and 2015, the under-five mortality" would imply that Bhutan has to reach infant and under-five mortality rates of, respectively, 41 and 30, which would depend greatly on the levels of interventions maintained[5].

Table 12: Incidence of child mortality, per 1000 live births, 1984, 1994, 2000

	1984	1990*	1994	2000
Infant mortality rate	102.8	90	70.7	60.5
Under age 5 mortality rate	162.4	123	96.9	84.0

Source: National Health Surveys 1984, 1994, 2000. * Linear extrapolation, MDG progress report 2002.

2.2 **According to WHO data, levels of stunting and underweight have considerably dropped over the last decade**. In its 2004 report "The Nutrition MDG Indicator. Interpreting Progress", the World Bank judged that there was not enough information to establish a trend on child growth and malnutrition in Bhutan. WHO has released numbers for the years 1886-1988 and 1999, but one of the reasons why the World Bank report does not dare extrapolate a trend from the available numbers is probably due to the fact that the age groups do not fully correspond between the two time periods. With this limitation in mind, one can see that the incidence of stunting among the under-five children has dropped from 56.1 percent to 40 percent between 1988 and 1999. The real MDG indicator, namely underweight, has declined

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[5] 2002 Bhutan MDG Report

from 38 percent in 1988 to 18.7 in 1999, making the MGD target already achieved. According to the 1999 survey, the incidence of underweight and stunting is higher for boys than for girls but the difference is not statistically significant (see Table 56, Annex).

Table 13: Incidence of stunting and underweight, nationally, boys and girls.

Year	Age	Stunting	Underweight
1986-1988	<=5	56.1	37.9
1999	0.5 to 4.99	40.0	18.7

Source: WHO Global database on child growth and malnutrition, July 2000.

2.3 **With an underweight rate of 19 percent, Bhutan is ranked as a Medium Priority Country**[6]. While all the countries in the South Asia Region were ranked as "Very High Priority Countries" in the abovementioned World Bank Report, Bhutan was ranked as a Medium Priority Country given the low incidence of underweight. If the considerable decrease over time had been recognized, Bhutan would have even entered in the category of the "Low Priority Countries". The question, however, is whether the very optimistic trend in child mortality and anthropometry reported above is credible as some correlated indicators are still very low. Those indicators include access to safe-cooking devices, access to safe water and sanitation, immunization rates, child feeding and other good practice maternal behaviors, and nutrition.

Cooking and heating practices

2.4 **Respiratory illnesses are the most important cause of under-five mortality in Bhutan**. According to the latest National Health Survey, pneumonia and other lung diseases accounted for 27.7 percent of the deaths of the children below five years of age in 2000.

Table 14: Causes of death in children under five years of age, in percentage, 2000

Pneumonia	21.0
Diarrhea & Dysentery	13.3
Other diseases of the lung	6.7
Premature birth	5.7
Fevers	5.7
Infections	3.8
Accidents	2.8
Hepatitis	1.9
Tuberculosis	1.0
Blood disorders , Gastrointestinal diseases, Swellings and others	7.6
Unknown	30.5
Total	100

Source: Ministry of Health using National Health Survey 2000.

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[6] Medium Priority Countries have a low prevalence of underweight children under five (<20%) but demonstrate unsatisfactory rates of progress towards reaching the Nutrition MDG. Twelve countries belong to this group, representing 11 percent of the World Bank's client population. See
Table 57 , Annex.

2.5   **Some housing characteristics, in rural areas especially have negative consequences on the children's health**[7]. For cooking, for instance, in rural areas, women use wood (86 percent) or gas (8.2 percent), often on open fires, in poorly ventilated houses. The smoke from those traditional fuels can be very harmful. It was shown that the prevalence of acute respiratory illnesses can be reduced dramatically by the use of smokeless stoves. Since the early 1990s, a program supported by the European Commission and UNICEF has promoted the installation of smokeless stoves to combat the prevalence of respiratory infections at home. About 22 percent of the population is now equipped with such stoves and this proportion should be increased in order to reduce further the incidence of respiratory illnesses and thereby of child mortality.

Table 15: Access to energy, by area and by poor/non poor (in percent), 2003

	All	Urban	Rural	Centre	East	West	Poor	Non poor
Electricity	39.6	97.5	25.8	29.9	26.7	56.9	13.9	51.5
Why no electricity								
No need	0.4	14.7	0.3	0.3	0.3	0.7	0.2	0.6
Too expensive	2.3	13.3	2.3	3.7	1.1	2.6	1.4	3.1
Not available	93.2	30.5	93.7	92.0	97.4	88.3	95.3	91.5
Other reason	4.1	41.5	3.8	4.0	1.1	8.4	3.2	4.8
Sources of lighting								
Electricity	37.1	97.3	22.7	26.6	24.6	54.4	12.4	48.5
Kerosene or gas lamps	57.1	2.4	70.2	63.2	70.5	41.8	81.9	45.6
Candles	0.9	0.1	1.0	2.2	0.2	0.6	0.4	1.1
Other	4.9	0.1	6.1	7.9	4.8	3.2	5.2	4.8
Energy for cooking								
Gas	20.2	70.3	8.2	11.9	7.6	36.1	1.3	28.9
Electricity	7.5	21.4	4.2	6.2	4.8	10.7	2.9	9.7
Wood	70.3	4.6	86.0	79.3	86.6	50.6	94.5	59.1
Coal	0.1	0.0	0.1	0.1	0.1	0.0	0.2	0.0
Kerosene	1.4	3.5	0.9	1.6	0.8	1.7	0.8	1.7
Dung cake	0.1	0.0	0.1	0.0	0.0	0.3	0.2	0.0
Other	0.5	0.3	0.5	0.9	0.0	0.6	0.1	0.7
Energy for heating								
Bukhari	24.6	30.0	23.3	28.4	15.5	30.0	13.6	29.8
Electric heater	6.7	28.7	1.4	2.0	1.9	13.8	0.7	9.5
Kerosene heater	0.9	1.8	0.7	0.5	0.7	1.3	0.8	1.0
Straw/brush/man. Stove	4.2	0.3	5.2	15.5	0.6	0.1	7.0	3.0
Other	24.8	2.1	30.2	35.0	30.3	13.6	37.2	19.1
Does not heat dwelling	38.7	37.0	39.1	18.7	51.1	41.2	40.9	37.7

Source: BLSS 2003.

Safe water and sanitation

2.6   **The share of the population with access to safe drinking water has dramatically increased, even in rural areas**. Access to safe drinking water has considerably increased

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[7] See also the Education Chapter for the impact of access to electricity and heating on school attendance and primary school completion.

over the decade, from about 30 percent in 1994 to about 70 percent in 2001 (According to the Statistical Yearbook). This progress is partly due to technical investments and partly to the higher involvement of communities in the water management system. An operation and maintenance policy was adopted at the village level, through the establishment of the Village Water Caretakers and Village maintenance committees.

Figure 3: Share of the population having access to safe drinking water
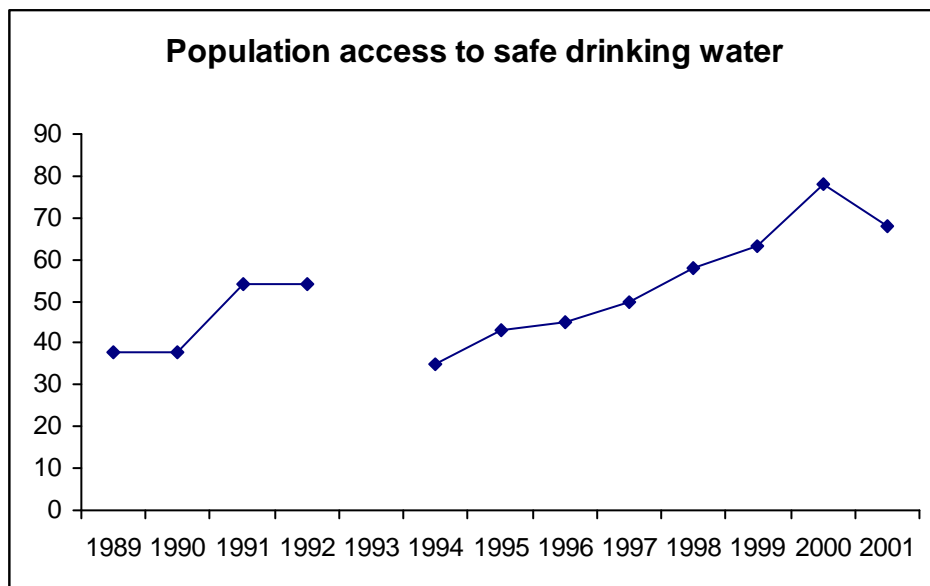
Source: Statistical Yearbook of Bhutan

2.7   **Despite the progress, the country has not yet reached the Ninth Five Year Plan's objective of universal access to safe drinking water in rural areas**. According to the BLSS, access to safe drinking water within a distance of 100 meters was estimated to be 98.5 percent in urban areas in 2003, but only 77 percent in rural areas[8]. Access is the lowest in the western region and is only 71.4 percent for the poor. On average, the Bhutanese spend about 41 minutes per day to fetch water. In urban areas, about 87 percent of the households boil and fifty percent filter their water. Households in rural areas are much less cautious. The use of improper water can cause the child to suffer from diarrhea and dysentery, which were themselves identified as a cause of death for children below five years of age in 13 percent of the cases.

Table 16: Access to safe water, by area and by poor/non poor (in percent), 2003

	All	Urban	Rural	Centre	East	West	Poor	Non poor
Safe water (<100m)	81.1	98.5	77.0	80.4	84.2	79.0	71.4	85.7
Pipe in dwelling	51.1	81.6	43.9	52.9	44.9	55.3	32.6	59.7
Neighbor's pipe	5.8	3.9	6.2	4.2	8.7	4.4	7.1	5.2
Public outdoor tap	23.5	13.4	26.0	21.8	30.1	19.1	30.5	20.3
Protected well	2.1	0.1	2.6	4.0	2.0	1.0	3.3	1.6

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[8] According to the 2000 National Health Survey, access to safe drinking water was 97.5 percent in urban areas, 73.2 in rural areas and 77.8 percent nationally in 2000.

Unprotected well	1.1	0.0	1.3	1.2	1.3	0.7	1.5	0.8
Spring	11.8	0.7	14.4	12.9	8.3	13.9	18.6	8.6
River, lake, pond	3.9	0.2	4.8	3.0	3.7	4.6	5.9	2.9
Other	0.7	0.1	0.8	0.1	0.9	0.9	0.5	0.8
Distance (if not inside)	86.5	15.6	92.1	114.3	103.9	49.4	127.4	54.7
Minutes per day	40.95	23.23	42.34	41.49	31.72	50.21	45.84	37.15
Boils water	56.0	87.0	48.6	63.3	34.7	69.3	43.7	61.7
Filters	15.7	51.8	7.1	10.2	12.1	22.4	6.3	20.1
Treat chemically	1.2	2.2	0.9	1.6	0.8	1.3	0.8	1.4

Source: BLSS 2003.

2.8   **Access to sanitation is almost universal**. About 93.5 percent of the population has access to latrines or toilets with flush, relative to 88 percent in 2000. However, nine percent of the poor and eight percent of those living in the East do not have access to sanitation. This can turn out be fatal to young children.

Table 17: Access to sanitation, by area and by poor/non poor, 2003

	All	Urban	Rural	Centre	East	West	Poor	Non poor
Flush toilet	12.9	55.5	2.8	7.2	5.1	23.3	1.9	18.1
Pit latrine, septic tank	16.2	24.3	14.3	16.6	13.0	18.8	10.2	19.0
Pit latrine, no tank	64.4	16.8	75.7	74.0	72.4	51.3	78.0	58.1
None (nature)	6.1	3.1	6.8	2.3	8.6	6.5	9.3	4.6
Other	0.3	0.3	0.4	0.0	0.9	0.1	0.7	0.2
Privacy (if some toilet)	14.7	28.9	11.2	16.9	11.3	16.1	8.9	17.3

Source: BLSS 2003.

Immunization

2.9   **The remarkable decrease in infant and under-five mortality is partly due to an efficient immunization policy**. The Expanded Program of Immunization (EPI) was launched in November 1979 with the objective of reducing TB, diphtheria, pertussis, polio and measles. Hepatitis B vaccine was introduced in 1996. The EPI services were delivered throughout the country by the existing network of hospitals, BHUs and Outreach Clinics. As a result, Bhutan achieved Universal Child Immunization in 1990. Not a single case of polio was reported since 1986 and no cases of death from neonatal tetanus have been reported since the mid 1990s. There is some indication that the incidence of measles is increasing, but the illness doesn't have mortal consequences.

Table 18: EPI coverage, in percentage

	1998	2000/2001	2002
BCG	94	93	90
Measles	71	81	85
DPT3	86	94	89
OPV3	85	94	91
HepB3	81	92	92
TT2+	NA	66	68

Source: Annual Health Bulletins.

2.10   **Despite the considerable achievement in immunization, further progress is still possible, in particular to reach those who are not already covered**. A nationwide EPI survey conducted in 2001 reveals that while 89.7 percent of the children below one year were fully vaccinated, only 64.5 percent of the less than one year olds had received valid doses. Some of the reasons for incomplete immunization or no immunization are revealed in Table 19. It seems that some work must still be done to increase awareness of the importance of immunization.

Table 19: Reasons for incomplete immunization or no immunization

Unaware of need immunization	25.0
Vaccine not available or inadequate	16.7
Family problem including mothers' illness	8.3
Children not brought because of illness	8.3
Other reasons	41.7

Source: Annual Health Bulletin, 2001, using EPI survey.

Good practice maternal behaviors

2.11   Good practice maternal behavior is of considerable importance for the child's health. There is very little information available on those practices and on the evolution of those practices over the last decade, but there is some indication that much progress could still be done.   For instance, according to the 2000 National Health Survey report, exclusive breastfeeding for children of less than one year is practiced in 42 percent of the cases only. Is this low incidence compatible with the above-described decrease in stunting, underweight and child mortality? How widespread are other good practice maternal behaviors such as prenatal care? How does hunger and malnutrition affect children, particularly in rural areas? The next two sections address those questions.

II. MATERNAL MORTALITY AND HEALTH

2.12   **The trend and level of maternal mortality are difficult to measure, which makes the interpretation of reported numbers difficult**. Maternal death is a relatively rare event and is not systematically reported, especially when delivery occurs at home (in 63 percent of the cases in Bhutan). Because of this difficulty, instead of focusing on the maternal mortality rates (MMR) as such, the approach in this report is to focus the analysis on factors which are related to maternal mortality and reproductive health such as the use of prenatal care, the place of delivery and the use of contraception methods. This chapter does not pretend to be exhaustive on maternal health issues as the analysis is dependent on a limited number of questions in the BLSS.

2.13   **The incidence of maternal mortality seems to have considerably decreased since the 80's but remains a serious issue for Bhutan**. According to the 2002 MDG report, the maternal mortality ratio decreased from 7.7 per 1000 live births to 2.6 between 1984 and

2000[9]. The objective of "reducing by three-quarters the MMR between 1990 and 2015", would imply that Bhutan has to reach a MMR of 1.4 by 2015, which is possible. Progress until today can be explained by increased awareness and improved health behavior during pregnancy and delivery, by nutrition programs to distribute iron and folic acid to pregnant women, by immunization programs against tetanus, and by increased access to health facilities. The main difficulty to further reduce the MMR is probably related to the access to Emergency Obstetric Care facilities by remote communities.

Table 20: Incidence of child mortality, per 1000 live births, 1984, 1994, 2000

	1984	1990*	1994	2000
Maternal mortality rate	7.7	5.6	3.8	2.6

Source: National Health Surveys 1984, 1994, 2000. * Linear extrapolation, MDG progress report 2002.

2.14 **The share of births attended by trained personnel is considerably low**. It is recognized that MMR can be substantially reduced thanks to the presence of trained personnel during deliveries. As Table 21 indicates, assistance by skilled personnel is still very low in Bhutan. In rural areas, only 49 percent of the deliveries are medically assisted and only 28.4 percent of the deliveries occur in a hospital or a maternity. The picture is better in urban areas but even there, a quarter of the deliveries still occur at home without any medical assistance. The share of non-attended deliveries at home is particularly high for the poor, namely at 64 percent. Further, the definition itself of "medical assistance" can be ambiguous. Some house-

Table 21: Prenatal care and place of delivery, 2003

	National	Urban	Rural	Poor	Non Poor
Prenatal care if pregnancy	71.8%	90.5%	66.4%	55.9%	81.1%
Delivery in hospital	31.2%	58.4%	23.2%	9.5%	43.7%
Delivery in maternity	5.5%	6.4%	5.2%	5.7%	5.3%
Delivery at home, with medical assistance	5.9%	5.8%	5.9%	3.8%	7.1%
Delivery at home, midwife	13.6%	4.7%	16.2%	16.1%	12.2%
Delivery at home, no medical assistance	43.6%	24.7%	49.1%	64.1%	31.6%
Delivery other place	0.3%	0.0%	0.4%	0.8%	0.0%

Source: BLSS 2003.

holds may consider the assistance of a "birth attendant" as medical assistance but those attendants are simply women from the community who may or may not have received medical training. In fact, the share of pregnancies attended by medical personnel in 2000, as reported in the yearly Health Bulletins and statistical yearbooks, is only 24 percent nationally, which is much lower than the 43 percent (not included midwife) reported in the BLSS.

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[9] The report however insists on being cautious in interpreting those numbers as there is no adequate registration system, particularly outside institute births.

Box 4: Statistical capacity and reporting on maternal health indicators.

The following illustrates the difficulty of monitoring maternal health indicators. Both Table A and Table B report the share of births attended by trained personnel. Table A is extracted from the of Statistical Yearbook of Bhutan and Table B reports the results of the National Health Surveys which were conducted in 1984, 1994 and 2000. Those surveys are one of the main sources of information for the health sector. Besides, the Ministry of Health publishes every year the Yearly Health Bulletin, which reports results from the annual HMIS surveys. Those bulletins also summarize the main results from the previous National Health Survey. First, it is striking that the shares of attended births reported in Table A and Table B considerably differ up to 2000. The Statistical Yearbook suggests that the share of attended births has now dropped to its level of the early 1990s, which is very unrealistic. Second, the more reliable Yearly Health Bulletins reported a number of 15.1 percent as the share of births attended by trained personnel in 1994 until the 1999 bulletin and subsequently reported a number of 10.9 percent for the same indicator. This difference in reporting between several official statistical publications and the lack of consistency in the numbers create doubts regarding the validity of the data and makes any analysis of the indicator difficult. This scenario occurs for other indicators and other sectors as well and reflects the need for a strengthening of the statistical capacity and for more coordination between the different information bodies.

Table A: Share of births attended by trained personnel, reported in Statistical Yearbook

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
16	21	25	25	36	25	79	78	79	34	15	24	NA	24

Source: Statistical Yearbook of Bhutan

Table B: Share of births attended by trained personnel, from Yearly Health Bulletins

1984	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
NA	NA	NA	NA	NA	10.9*	NA	NA	NA	NA	NA	23.6	NA	NA

Source: Yearly Health Bulletins, reporting results from National Health Surveys 1984, 1994, 2000.
*Reported 15.1 until 1999 bulletin.

2.15 **Maternal mortality is also the result of inappropriate health practices during the pregnancy. The use of prenatal care is still not totally widespread.** The use of antenatal care during pregnancy turns out to be crucial for a safe delivery. As Table 21 above indicated, only 66 percent of the pregnant women in rural areas received prenatal care in 2003. The difference between urban and rural areas is considerable. Since most of the poor live in rural areas, it is also not surprising to find differences of the same order of magnitude between the poor and the non poor. Table 22 reports the different complications, which were diagnosed for those who attended prenatal care. The main complication is anemia which is itself mainly due to iron deficiency. More will be said about anemia in the section on nutrition.

Table 22: Complications during pregnancy, in percentage.

	1996	1997*	2000	2001	2002
Abortion	14	16	11.4	5.4	12.1
A.P.H	3	3	3.1	0.8	2.2
P.I.H	12	10	5.7	4.5	3.9
Anemia	68	67	77.1	88.2	81.5
Hepatitis	2	1	0.2	0.1	0.0
Malaria	2	2	1.3	0.3	0.0
Others	1	1	1.1	0.8	0.3
Total	100		100	100	100

Source: National Health Bulletins. * Estimated from a graph.

2.16   **The use of modern contraception methods is still low**. Despite progress and the willingness of the RGOG to control population growth, the use of modern contraception methods is still low, especially in rural areas. Only 64.4 percent of the women know some modern contraception methods, which is much less than the 95 percent estimate of the 2000 survey. Among those who know about the methods in rural areas, only 27 percent of the interviewed women actually use those methods.

Table 23: Use of modern contraception methods, 2003

	National	Urban	Rural	Poor	Non Poor
Know some modern contraception methods	64.4%	75.8%	61.4%	60.0%	66.3%
Use some modern contraception methods *(for those who know the methods)*					
Use	44.5%	43.9%	44.7%	43.2%	45.0%
Not concerned	43.2%	48.8%	41.3%	42.4%	43.5%
Not available	0.3%	0.1%	0.3%	0.2%	0.3%
Religious, moral objection	0.7%	0.7%	0.7%	0.8%	0.6%
Husband, family objection	3.9%	1.6%	4.7%	4.3%	3.7%
Side effects	1.9%	1.7%	2.0%	2.7%	1.7%
Too expensive	0.0%	0.1%	0.0%	0.0%	0.0%
No response	3.8%	2.0%	4.3%	5.7%	3.0%
Doesn't know	1.8%	1.2%	2.0%	0.7%	2.2%

Source: BLSS 2003.

2.17   **Bhutanese use a variety of contraception methods**. As reported in Table 24 below, the most practiced method is vasectomy, followed by DMPA. A current problem in Bhutan is the high incidence and the rise in teenagers' pregnancies. Abortion is generally not accepted in the Buddhist tradition but is officially legalized by the RGOB if it can be certified that the pregnancy threatens the life of the mother, or if the fetus has been shown to have structural abnormalities. Abortion occurred in 12.1 percent of the pregnancies reported to hospitals and BHUs. No information on abortion or other sources of complications is available for the women who did not receive prenatal care.

Table 24: Methods of contraception used in Bhutan

Method	Share
Vasectomy	44%
DMPA	19%
IUD	11%
Pills	11%
Tubectomy	10%
Condoms	4%
Total	99%

Source: National Health Survey, 2000

III. NUTRITION

2.18   **Some households suffer from hunger and malnutrition.**   Using the BLSS and nutrition conversion factors, it is possible to obtain the number of kilo-calories, and other nutrition elements, from the quantity of each good consumed by the household. All types of consumption are considered, whether bought, produced or received. However, as the BLSS was not designed for a nutritional analysis, the results are subject to a number of caveats. First, it is not possible to estimate the nutritional content of meals taken outside the house, a problem which regards 11 percent of the households. The share of such expenditure in total household food budget though is only 3.6 percent in rural areas (versus 5.8 in urban areas) and 1 percent for the poor. Second, the precision of the BLSS information on consumption is not high enough to allow for a rigorous nutrition analysis. Third, the way of cooking and combining elements matters on a nutritional point of view, but this information is not available. Finally, there is no information on the allocation of food within the household. The only possible analysis is simply to observe whether the household potentially has sufficient food to feed every member.

2.19   **Food security as estimated using nutritional information is an issue for a relatively important share of the population, particularly in rural areas and in the East.** Two methodologies were applied to estimate the share of the population that does not meet the caloric requirements. First it is possible to compare the number of per capita kilo-calories in each household with the standard threshold of 2,124 kilo-calories. Second, one can use a household specific threshold, which is a function of the number of household members of each age. Following this second methodology, about 48.3 percent of households (living mostly in rural areas) do not meet the caloric requirements. The share is 61.5 percent in the eastern region and 72.8 percent for the poor. Interestingly, the estimated national average daily per capita calorie intake is the same as what had been estimated in 1993 in a study conducted by the RGOB and the FAO. Results are reported in Table 25. The first column reports the share of population whose per capita consumption lies below the poverty line (at Nu740.36), as will be further explained in Chapter 3. The second column reports the share of the population whose per capita consumption on food is below the food poverty line (at Nu403.79). The third column reports the share of the population who assessed suffering from hunger at least one month a year (this is developed in Chapter 3).

Table 25: Share of households suffering from hunger and nutritional deficiencies.

	Monetary poverty	Monetary poverty, food	Hunger, subjective	Caloric poverty <2124Kcal	Caloric poverty hh specific	Average daily caloric intake	Iron poverty	Iron from meat poverty	Vegetables and fruits <400 grs*
National	31.7%	40.2%	20.1%	43.2%	48.3%	2542.4	5.5%	100.0%	64.9%
Urban	4.2%	15.5%	1.8%	34.9%	40.5%	2674.1	2.7%	100.0%	68.4%
Rural	38.2%	46.1%	24.5%	45.2%	50.1%	2511.0	6.2%	100.0%	64.0%
Poor	100.0%	85.1%	32.8%	68.3%	72.8%	1953.7	10.8%	100.0%	77.5%
Non poor	0.0%	19.3%	14.3%	31.6%	36.9%	2815.7	3.0%	100.0%	59.0%
West	18.7%	25.7%	26.9%	28.8%	33.2%	2968.7	2.1%	100.0%	61.5%
East	48.8%	56.8%	12.8%	61.5%	67.3%	2026.4	10.3%	100.0%	73.9%
Centre	29.4%	40.8%	19.2%	41.5%	46.6%	2559.4	4.5%	99.9%	58.3%

*WHO requirement of 400 grams per person per day.

2.20   **Iron deficiency is a major problem in Bhutan**. Comparing the household iron consumption with a household-specific threshold reveals that on average, 5.5 percent of the Bhutanese suffer from iron deficiency. When one takes into account iron from meat only, not a single household meets the requirements. Even though calculations are not precise and suffer from many caveats, there is no doubt that iron deficiency is an issue in Bhutan. Iron deficiency is the main cause of anemia in the country and has other consequences as well.

2.21   **The consumption of fruits and vegetables also seems too small relative to international requirements**. **The share of expenditure on alcohol is relatively high, particularly for poor households**. Nationally, 64.9 percent of the Bhutanese consume less than 400 grams of fruits and vegetables per person per day (the WHO requirement for developing countries). Finally, the share of expenditure on alcohol in total food budget is about 10 percent, as indicated in Table 26. Poor households spend on average 9.8 percent of their food budget on alcohol.

Table 26: Share of different food items in total budget and food budget (in percent)

	National		Urban		Rural		Poor		Non Poor	
	Share of total budget	Share of food budget	Share of total budget	Share of food budget	Share of total budget	Share of food budget	Share of total budget	Share of food budget	Share of total budget	Share of food budget
Rice	7.1	19.3	4.5	15.5	8.4	20.7	12.1	21.3	6.4	18.9
Cereals	3.5	9.7	2.6	9.2	4.0	9.8	7.1	12.4	3.1	9.1
Dairy products	6.8	18.6	5.7	19.8	7.4	18.1	8.6	15.1	6.6	19.3
Fish	1.0	2.6	0.9	3.0	1.0	2.5	1.5	2.7	0.9	2.6
Meat	3.6	9.7	3.1	10.7	3.8	9.4	4.3	7.6	3.5	10.2
Fruits	1.0	2.7	1.2	4.2	0.9	2.2	1.2	2.1	1.0	2.9
Vegetables	3.4	9.2	2.6	9.1	3.8	9.3	6.0	10.6	3.0	8.9
Tea, coffee	0.8	2.3	0.6	2.2	0.9	2.3	1.2	2.0	0.8	2.3
Cooking oil	2.0	5.4	1.5	5.3	2.2	5.4	3.8	6.6	1.7	5.1
Spices	2.5	6.8	1.7	5.9	2.9	7.0	4.0	7.1	2.3	6.7

Alcoholic drinks	2.2	6.0	1.0	3.4	2.8	6.9	5.6	9.8	1.8	5.2
Non alcoholic drinks	0.4	1.2	0.8	2.8	0.3	0.7	0.2	0.4	0.5	1.4
Food taken away	1.5	4.2	1.7	5.8	1.5	3.6	0.6	1.1	1.6	4.8
Tobacco and Doma	0.8	2.3	0.8	2.9	0.8	2.0	0.7	1.2	0.9	2.5
	36.6	100.0	28.7	100.0	40.5	100.0	57.0	100.0	34.0	100.0

Source: World Bank Staff using BLSS 2003.

IV. SUPPLY AND DEMAND OF PUBLIC HEALTH SERVICES

Supply

2.22   **The RGOB increased the supply of health facilities and programs over the last decade.** Bhutan now has 1000 hospital beds, 166 BHUs, 500 nurses and 122 doctors. The number of BHUs in particular grew fast, which translates the intention of the RGOB to reach rural areas. As a result, the basic health coverage has increased from 70 percent in 1992-1993 to about 90 percent in 2000. The number of health programs and initiatives also grew considerably. Those include the Expanded Program of Immunization (EPI), the Maternal and Child Health Program (MCH), the Child Care and Development Program (CCDP), the ARI and Diarrhea Disease Program, the Safe Motherhood Program, the Reproductive Health Program, the National STDs/AIDS Control Program, the National Malaria Control Program (NMCP), the Iodine Deficiency Disorders Program (IDDCP) and the Nutrition Program.

Figure 4: Number of medical staff, BHUs and hospital beds, 1989-2002
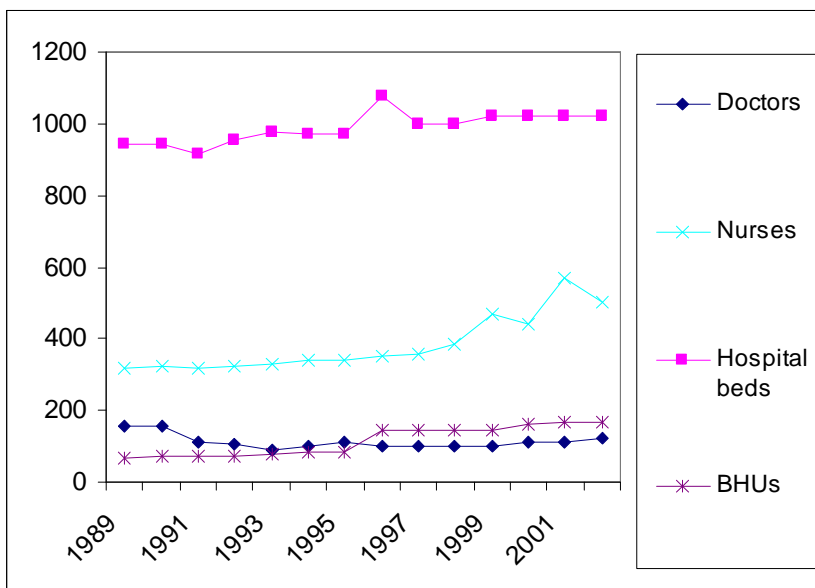
Source: Statistical Yearbook using Annual Health Bulletins.

Box 5: **The Ninth Five Year Plan and the Health Sector**

The specific objectives in the Plan for the health sector are:
- Enhancing the quality of health services
- Targeting the health services to reach the unreached
- Strengthening the traditional medicine system and its integration with the overall system
- Enhancing self-reliance and sustainability of health services
- Intensifying human resource development for health and establish a system of continuing education
- Strengthening health management information systems/research and their use
- Promoting community based rehabilitation and mental health, and finding innovative means to enhance the mental well-being of people
- Developing appropriate secondary and tertiary health care services, while maintaining the balance between primary, secondary and tertiary health care
- Intensifying the prevention and control of prevailing health problems

2.23   **Despite the increase in absolute numbers, the number of medical staff per person has not increased and the number of hospital beds per person has even decreased**. Indicators on a per capita basis are always to be treated with caution in Bhutan given the absence of census data. Estimations based on a total population of 734,318 in 2002 and a growth rate of 3.1 percent in the 1990s, indicate that the number of doctors and hospital beds per person has gradually decreased since 1989.

Figure 5: Number of medical staff and hospital beds per 10,000 persons, 1989-2002
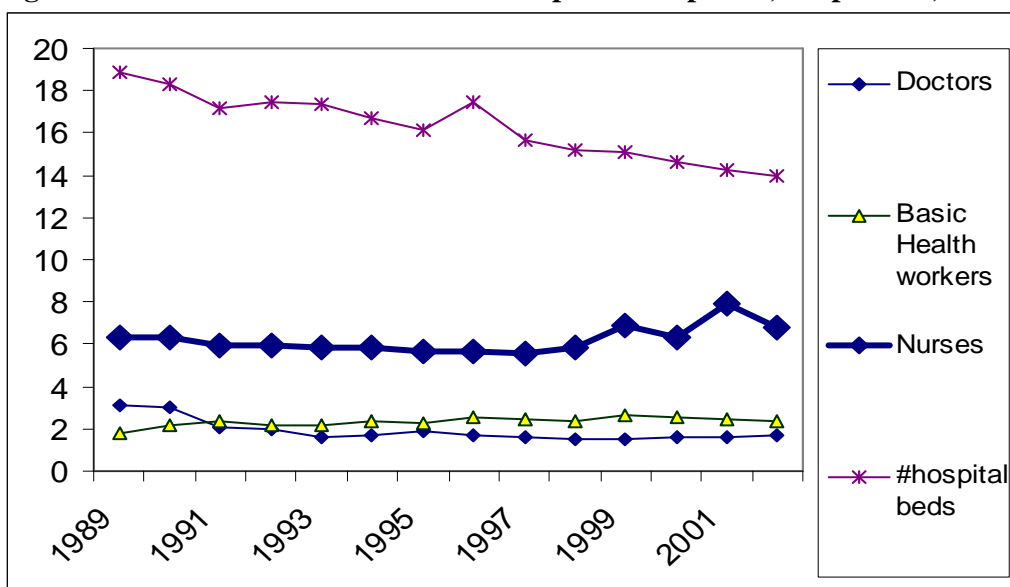
2.24   This evolution translates the current policy of the RGOB to focus its attention on basic and rural health services. In fact, for serious cases where no care can be found in Bhutan, the RGOB pays for health interventions abroad, which considerably weighs on the budget. The number of Basic Health Workers and nurses per capita has remained stable over the period and, possibly, slightly increased. Generally speaking, however, the willingness of the RGOB to increase the supply of health services and to improve its health outcomes is not visible on a per capita base.

Demand

2.25   **Even though health care is almost entirely free in Bhutan, there are still obstacles to utilization of existing health facilities and services**. According to the BLSS, 14.5 percent[10] of the persons who are sick or injured do not seek health care. Table 27 reports some of the reasons for this low use rate. About 40 percent of those who were sick but did not consult a health specialist had not felt the need for medical help, which is reasonable. About 19 percent could not go to the health unit because of the distance and another 21 percent because of the lack of time (which can itself also be related to the distance and to the necessity to work). The 2000 National Health Survey Report mentions that there is not significant link between demand for health care and distance "indicating that either distance is not very important or other sources of advice are available nearby". The report's analysis however does not control for other household characteristics. Some people indicate the lack of money as a reason for not consulting, but those are exceptions observed in rural areas only. Trust and other reasons account for about 18.6 percent of the cases. This might include beliefs and cultural values restricting the demand for health care.

2.26   **Most of the health demand is directed to hospitals or BHUs but traditional medicine is still popular, especially in rural areas**. Almost 10 percent of the persons who are sick or injured in rural areas go to a traditional health practitioner. Traditional Medicine is relatively harmonized with the modern, public health care system in Bhutan. It is integrated in the official education system and is delivered under a system of cross referral with other health mechanisms.   Besides, the RGOB is working in collaboration with monastic institutions to provide health education, which is a very effective way of promoting safe and healthy behavior as people trust monks and hold them in high esteem.

2.27   **Health services are free in Bhutan but about 19 percent of the households have some medical expenditure**. The cost of health care is seldom (only in 2.4 percent of the cases) a reason for not seeking care when needed. Nevertheless about 18 percent of the population has medical expenditure, either for consultations and exams or for medicines. The average share of such expenditure in total household consumption is 7.7 percent for consultations and exams and 3.7 percent for medication. This probably explains why health care demand is significantly lower for the poor[11]: only 82 percent of them look for health care

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[10] This share was estimated at 22 percent in the 2000 National Health Survey.
[11] It is unlikely that the poor were estimated poor simply because no having medical expenditure decreases per capita consumption.

and 12 percent have medication against 87 percent and 18 percent, respectively, for the non-poor.

Table 27: Demand for health care, by area and by poor/non poor

	National	Urban	Rural	Poor	Non Poor
Sick/injured in last four weeks	15.1%	12.0%	15.8%	14.3%	15.4%
Demand for health care					
No demand	14.5%	11.9%	15.0%	18.0%	13.0%
Private doctor	2.5%	5.5%	1.9%	1.4%	3.0%
Hospital or BHU	70.5%	78.5%	69.1%	65.3%	72.8%
Nurse	0.1%	0.0%	0.1%	0.3%	0.0%
Pharmacist	0.3%	1.2%	0.2%	0.3%	0.3%
Dentist	0.2%	0.4%	0.2%	0.0%	0.3%
Traditional practitioner	8.2%	1.2%	9.5%	11.5%	6.8%
Other	3.6%	1.3%	4.0%	3.2%	3.7%
Reasons for no demand if sick					
No need	43.0%	71.1%	39.0%	37.6%	46.3%
No time	19.6%	12.2%	20.7%	24.0%	17.0%
No money	2.4%	0.0%	2.8%	1.7%	2.9%
No transport/too far	16.8%	2.4%	18.9%	19.4%	15.3%
No trust	0.5%	0.3%	0.6%	1.3%	0.1%
Other	17.5%	14.1%	18.0%	16.0%	18.4%
Health expenditure					
Has health expenditure (if sick)	18.0%	13.7%	18.8%	11.4%	20.7%
Amount	801	1278	723	220.4	957.9
Share in total budget (for those who spend)	7.7%	6.1%	7.9%	5.5%	8.2%
Medication					
Had medication in last four weeks	16.0%	15.7%	16.1%	11.7%	18.0%
No need of medication	82.2%	83.5%	81.8%	86.1%	80.3%
Need of medication but can not afford	0.1%	0.1%	0.1%	0.0%	0.1%
Need of medication but not available	0.2%	0.0%	0.2%	0.3%	0.1%
Need of medication but pharmacy too far	0.2%	0.0%	0.3%	0.2%	0.2%
Need of medication, other reason	1.4%	0.7%	1.5%	1.7%	1.2%
Has medicine expenditure (everybody)	3.2%	6.3%	2.4%	0.9%	4.2%
Amount spent in last four weeks	498	471	514	84.4	600.7
Share in total budget (for those who spend)	3.7%	2.8%	4.2%	2.1%	3.9%

Source: BLSS 2003.

2.28 **Multivariate models allow estimating the marginal impact of a variable on the probability of demand for health care while controlling for all the other variables.** Determinants of demand for health care can be analyzed with more precision using multivariate models because such models control for variables which may be simultaneously associated with the use of health services. Let's say that demand for health care is observed to be lower in rural areas. Is it because of poverty, is it because of access, or is it for any other reason specifically linked to rural areas? Estimating econometrically the determinants of demand for health care is important as it will allow defining action and programs better. The

caveat is that not all variables which have an impact on demand for health care are measurable or available so that caution is still needed when interpreting the results. Separate models are run for rural and urban areas because the determinants of demand for health care are fundamentally different in each area. The results presented below, as always with regressions for the determinants of demand for health care, must however be interpreted with caution. Indeed, the model is estimated only for those households that have been sick during the last four weeks, an event which also depends on variables such as gender, age and education[12]. The specification in this report does not treat this selection issue because of the difficulty to find identification variables.

2.29 **Regressions confirm that distance is an obstacle in rural areas but it is probably not the only factor explaining why people look or not for medical assistance: poverty and cultural values also play a role**. The results of the regressions, as reported in Table 28, seem to indicate the following. First, urban men have a higher likelihood than women to look for health care when they are sick, but no gender difference is observed in rural areas. Second, in rural areas, the likelihood to consult is smaller in the East than in the other regions (the Centre is the omitted variable omitted in the regression). Third, richer households are more likely to seek for care in rural areas. No impact of consumption is observed in urban areas. Fourth, the regression confirms that distance to the hospital or BHU is an obstacle in rural areas. Fifth, education does not seem to have an impact in rural areas. In urban areas, better educated people are more likely to seek care than those with more education. This surprising result may be explained by the fact that educated people may need less a diagnose than those with less education, or by the fact that better educated people also find it more difficult to leave their work to go to the health specialist as waiting time seems to be an issue in urban areas. But more research certainly needs to be done to better understand the determinants for health care.

Table 28: Determinants of demand for health care, marginal impact

	Urban	Rural
Male	0.031*	0.014
Age	-0.001	-0.002
Age squared	0.000	0.000
West	-0.030	-0.006
East	0.002	-0.056**
Number of years of education	-0.014**	-0.021
Number of years of education, squared	0.001	0.001
Log. Per capita expenditure	-0.018	0.045***
Time to hospital / BHU (hours)	-	-0.009**
Time to bus station (hours)	-	-0.004
Time to tarred road (hours)	-	0.003
# Observations	1213	1453
Pseudo R2	0.038	0.036

Source: World Bank staff using BLSS 2003. Specification: probit. * Stands for significant at a 10 percent level, ** at a 5 percent level and *** at a 1 percent level.

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[12] However, the likelihood to be sick is observed to be the same for the poor and the non poor in the BLSS.

2.30   **Satisfaction towards health services in BHUs or hospitals is relatively high with the exception of waiting time in urban areas**. The BLSS asked every household their opinion about several aspects of BHUs or hospital quality. Table 29 below reports the share of the population which finds the services satisfactory or good. There is little variation in the answers, but the only result which stands out is the relatively lower satisfaction with respect to waiting time in urban areas.

Table 29: Satisfaction towards BHUs or hospitals, by area and by quintile (in percent)

	National	Urban	Rural	Q1	Q2	Q3	Q4	Q5
Competence of staff	98.6	98.0	98.7	98.4	99.2	99.4	97.7	98.2
Availability of medicines	98.2	98.0	98.3	98.6	98.2	98.7	98.0	97.7
Affordability of medicines	95.8	98.2	95.2	96.4	95.9	96.0	94.8	95.8
Quality of facilities	99.4	98.8	99.5	99.8	99.7	99.8	99.5	98.2
Waiting time	93.3	80.8	96.3	95.4	95.1	94.2	93.1	88.7

Source: BLSS 2003.

V. SUMMARY

2.31   Infant and maternal mortality and child malnutrition probably decreased over the last two decades although monitoring is difficult because of the absence of reliable data records. A major factor in explaining the progress is certainly the increased access to safe water and sanitation. In that regard, one key factor has been the transfer of responsibilities regarding water and sanitation from the Public Works division of the Ministry of Communications to the Ministry of Health and Education at the end of the 1990s. This has been an important step towards the promotion of community capacity building and closer relationships to the user needs. As the BLSS indicated, access to safe water and sanitation is however not universal yet and more efforts need to be done if the health sector wants to reach its objectives. The BLSS also confirmed the existence of pockets of hunger and malnutrition in the country, including the prevalence of iron deficiency.

2.32   Other initiatives and programs that can explain the reduction in child mortality which should be further developed include: the Maternal and Child Health program, the Nutrition program, the ARI and Diarrhoeal diseases programs, the national policy on breast feeding, the designation of baby friendly hospitals, and the expansion of Maternal and Child Health Clinics. Maternal mortality rates will not decrease further unless access to Emergency Obstetric Care services is expanded, maternal anemia (largely due to iron deficiency) reduced, and the share of deliveries by skilled attendant increased.

2.33   The RGOB's focus on primary health care probably benefited rural areas. However, distance is still an obstacle for some households. The BLSS also indicated that other factors may also prevent some from using health facilities and medication. It will be important to better understand the determinants of use of health facilities as it can guide the RGOB to focus more on quantity, quality or other aspects of health services.

2.34   Regarding monitoring and statistical capacity, the Ministry of Health is collecting highly interesting data through the Basic Health Units on a monthly and yearly basis (the HMIS data) but those data are not directly accessible for analysis. The National Health

Surveys are informative but coordination between the Statistical Bureau and the Ministry of Health could be reinforced as reported numbers sometimes differ. The new census will hopefully help updating health indicators such as coverage rates or usage rates. This will help in defining the sector priorities and designing appropriate policies.

CHAPTER 3. SOCIAL PROTECTION

A key element of the Ninth plan is to improve living standards, particularly of the poor. This chapter identifies who is poor or likely to become poor in Bhutan using the latest Living Standard Survey. A first section briefly reports the incidence of poverty and discusses the poverty profile, building upon the results of the 2003 Report on Poverty and Inequality A second section examines the determinants of poverty using multivariate regressions. A third section identifies poor, vulnerable groups. The last section explores some of the strategies, formal and informal, employed by the households to cope with life difficulties.

I. POVERTY INCIDENCE AND PROFILE

3.1 **About one third of Bhutanese lives in poverty**. The RGOB recently published a report on poverty and inequality based on the last household survey of 2003. According to this report, using a poverty line of 740.36 Ngultrum per month, the share of the population living in poverty in 2003 is 31.7 percent nationally[13]. The incidence of extreme poverty (the share of the population whose total per capita expenditure is below the food poverty line) is 3.8 percent. Those measurements rely on a number of assumptions and only capture some aspects of human well being. However, the merit of the Poverty Report has been to establish for the first time a consensus on the idea that some people live in poverty in Bhutan and to make poverty reduction a priority for the government. The report also confirmed the existence of pockets of hunger in the country; this receives more attention in section III of this chapter.

3.2 **Poor households are less educated and dependent on agriculture**. As the 2004 Report on Poverty and Inequality explained, some households are more affected by poverty than others:
- ③ those with larger families
- ③ those with less education
- ③ those who are dependent on agricultural income
- ③ those with young household
- ③ those of foreign origin

Table 30: Poverty incidence for selected groups, by characteristics of the household head.

	Population share	Poverty

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[13] Consumption aggregate and poverty line were estimated by the National Statistical Bureau with the help of ADB. Methodology and results are published in the Report on Poverty and Inequality.

	Urban	Rural	Urban	Rural
Working	92.2%	81.5%	4.3%	36.9%
Looking for work	0.4%	0.3%	0.0%	93.6%
Not in labor force	2.9%	13.7%	0.9%	43.6%
Has a secondary occupation	2.1%	4.9%	1.6%	33.7%
Not working	4.4%	4.6%	5.2%	43.0%
Illiterate	25.50%	75.40%	7.3%	41.1%
Less than primary	56.9%	96.8%	6.4%	39.4%
Agriculture	2.4%	71.9%	3.2%	39.5%
Industry	8.5%	1.4%	5.7%	22.4%
Services	81.3%	8.2%	4.2%	16.7%
Underemployment (Working less than 20 hours per week)	9.1%	21.1%	3.8%	43.6%
Government	57.2%	3.3%	5.4%	5.5%

Source: BLSS 2003.

3.3   **The lack of work is also associated with poverty**. The incidence of poverty for households with a head in search of a job is as high as 93.6 percent in rural areas. The incidence of poverty is 43.6 percent for heads who are not in the labor force. This applies to only 0.3 percent and 14 percent of the population, respectively. Underemployment, which is affecting 9 percent and 21 percent of the households in urban and rural areas, respectively, is also associated with more poverty. In rural areas, the incidence of poverty is lower for those working in the public or in the non-farm private sectors.

3.4   **There are considerable regional differences**.   Poverty is essentially a rural phenomenon: the incidence of poverty is 4.2 percent in urban areas and 38.3 percent in rural areas (in which 80 percent of the population lives). As expected, poverty is higher in the East and lower in the West, both in rural and urban areas. There are also differences from one district to another, even within regions (see details in Table 58 in Annex 3). Urban poverty for instance, while relatively low at a national level, can be high in some districts, particularly in Trashigang, followed by Zhemgang (Centre), Yangtse, Lhuntshi and Mongar. In urban Trashigang, for instance, poverty is as high as 25 percent. The ranking of the districts is different in rural areas. In Mongar, rural poverty reaches a peak of 71 percent, followed by Yangtse, Pemagatschel and Samtse (West).

Table 31: Poverty incidence, by region and district.

	Population share		Poverty	
	Urban	Rural	Urban	Rural
West	74.2%	31.9%	2.5%	27.6%
East	10.7%	39.5%	12.7%	51.1%
Centre	15.1%	28.6%	6.6%	32.3%

Source: BLSS 2003.

3.5   **The poor, especially in remote rural areas, have difficult access to services**. Rugged terrain and low population density in Bhutan result in difficult access to public facilities and services for the rural population. For instance, 60 percent of the population lives more than an hour away from a post office, 55 percent from a telephone, 83 percent from the

headquarters and 70 percent from a bus station. Approximately 45 percent of those in remote areas live in poverty, as opposed to 38 percent for rural areas as whole. At this stage, it is not clear whether it is distance as such which causes poverty or whether the causes are also to be found in other characteristics of remote areas or of people living in those areas (such as higher fertility, reliance on agricultural income or lower education levels). The multivariate regressions presented in the next section should help clarifying those issues.

Table 32: Incidence of poverty in rural areas for those living more than an hour away from different facilities.

	Population share	Poverty Index
Time to post office	60.2%	44.3%
Time to phone	54.8%	45.0%
Time to police	65.5%	42.9%
Time to BHU	63.1%	44.6%
Time to drugstore	23.5%	41.1%
Time to headquarter	82.5%	42.1%
Time to wood	51.9%	34.9%
Time to tarred road	60.7%	47.0%
Time to feeder road	25.9%	47.8%
Time to food market/shop	64.3%	44.4%
Time to bank	65.3%	42.8%
Time to agricultural/ livestock extension center	59.5%	44.2%
Time to village temple	35.6%	43.0%
Time to petrol station	35.6%	43.0%
Time to bus station	70.6%	43.8%

Source: BLSS 2003.

3.6 **Access to land is relatively equal for poor and non-poor, but is very different across regions**. On average, poor households owe 4.95 hectares of land against 4.70 for non poor households. The Gini index of land inequality though is relatively high because of strong differences across regions. In the West, the average surface owned is about twice as large as in the East. It is also higher than in the Centre, but less dramatically so.

Table 33: Number of hectares of land, by characteristics of the household head.

	National	Urban	Rural	Poor	Non poor	West	East	Centre
Orchard	0.32	0.16	0.36	0.41	0.33	0.79	0.03	0.33
Wet land	0.68	0.26	0.79	0.60	0.90	1.01	0.42	1.04
Dry land	1.64	0.37	1.94	2.07	1.86	2.19	1.62	2.12
Other land	1.62	1.22	1.71	1.88	1.61	2.63	1.07	1.58
Total	4.26	2.00	4.80	4.95	4.70	6.61	3.14	5.07

Source: BLSS 2003.

Box 6: The Ninth Five Year Plan and Poverty

"Improving quality of life and income, especially of the poor" is one of the five overall goals of the Ninth Five Year Plan (2002-2007). The concept of poverty is relatively new for Bhutan and complements the concept of "National Happiness". The 9FYP's analysis of poverty does not rely on household survey data but on a gewog level survey (the Poverty Assessment Analysis, 2001). As part of the MDG effort, the RGOB committed to reduce extreme poverty and hunger by half by 2015. The Plan identifies landlessness and limited size holding as one of the main causes of poverty. The most targeted poverty projects are systematic land distribution and resettlement of poor rural farmers. The Plan also identifies inaccessibility to goods and services as one of the major cause of poverty. The RGOB strongly emphasizes the construction of new roads, as well as community schools and boarding schools.

Other identified determinants of poverty are shortages of labor in agricultural households as the result of migration to urban areas and climate induced disasters like floods, landslides, fire and death. In the Plan, the RGOB also commits to continue providing quality health and education services, improve access to micro-credit, housing, water, electricity and telecommunications, assist the agriculture sector, shift decision making powers to the people, and strengthen statistical and monitoring capabilities.

The Plan also addresses urban poverty and other issues caused by migration from rural to urban areas.

II. DETERMINANTS OF POVERTY

3.7 **Multivariate regressions give insights into the determinants of poverty**. While the poverty profile presented above gives the probability of being poor according to various characteristics, the multivariate linear regressions (presented in detail in Annex 3) give the marginal impact on the logarithm of per capita consumption[14] of a particular variable, controlling for all the other household characteristics. With the exception of the impact of geographic location on poverty, the results for the linear regressions presented in this section are independent of the choice of the poverty lines and price deflators used for poverty measurement. Separate regressions are provided for the urban and rural sectors.

Demographics

3.8 **Demographic variables are strong determinants of per capita consumption**. The results presented in Annex 3 confirm that expected per capita consumption:
- decreases with family size
- increases among households without spouse, in urban areas
- increases among households with older heads, in urban areas
- increases among those who have Bhutanese nationality, in urban areas
- increases among households with female heads, in rural areas.

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[14] Categorical regressions are also estimated and presented in Annex 3 for the probability to be poor or to suffer from hunger.

3.9   **There are diseconomies of scale in terms of family size**. The results suggest that urban and rural households with larger number of adults living in the household are likely to have lower levels of per capita consumption. This phenomenon arises in cases where there are diseconomies of scale; the share of consumption that an extra adult brings to the household is less than the share of his/her expenses.

Education of household head

3.10   **In urban areas, the gains from literacy, medium and high secondary and superior education are substantial but the gains from other basic education (primary and low secondary) are not**. According to the estimates provided by Table 60 for urban areas, a household with a literate head has an expected level of consumption that is approximately 22 percent higher than that of a household with an illiterate head. However, basic education of the head (primary and low secondary education) does not seem to have a significant impact on the household's per capita consumption as compared to households with a head having no education. By contrast, our estimates indicate that medium, high secondary and superior education levels are important determinants of per capita consumption improvement. Finally, in urban areas the returns to high secondary education are considerably higher than the returns to lower secondary levels.

3.11   **In rural areas, the gains from literacy and secondary are substantial but the gains from primary education are not.** According to the estimates provided by Table 60, a household with a literate head has an expected level of consumption that is approximately 6 percent higher than that of a household with an illiterate head (but it is only significant at a 13 percent level). Also, as indicated by our estimates, rural heads which are literate are less likely to feel hungry. Returns to education in rural areas seem to have about the same general pattern as in urban areas.

Employment of household head

3.12   **Employment patterns for the head also have some impact on per capita consumption and thereby on poverty.** The regression specification enables us to look at various issues (Table 61):
- *Unemployment*: contrasting with what simple correlations were suggesting, having a head unemployed, searching for employment or not in the labor force does not seem to have a negative impact on per capita consumption in both urban and rural areas.
- *Sector of activity*: according to the estimates, urban households having a head with a job in the public sector have levels of expected per capita consumption that are smaller by 17 percent than those of households having a head working in the private sector.
- *Type of activity*: rural households with a head working in the industry or services sectors have expected consumption levels which are approximately 28 percent higher than those of heads working in agriculture related activities. In urban areas, working in the services is associated with higher per capita consumption than working in the industry sector.
- *Land ownership*: more land is associated with a higher level of per capita consumption (which increases by about 0.2 percent for every extra hectare of land). This result contrasts with the simple correlations according to which the poor have as much land as

the non poor. However, the correlation simply reflects the fact that the poor are often in agriculture.

- *Migration*: in households where the head was absent for at least two months in the year preceding the survey, per capita consumption is higher by 6 percent in urban areas and by 20 percent in rural areas (see the section on migration below).

Geography

3.13   **Geographic location is an important determinant of per capita consumption**. The regressions confirm the poverty profile. Households in the East have an expected level of per capita consumption which is lower than for households in the West (the omitted variable in the regression) by 32 percent and 40 percent for urban and rural areas respectively. Households in the Centre do better than in the East but still have expected consumption below the level of what can be expected in the West.

Services

3.14   **Within regions, access to basic services or facilities is a determinant of poverty**. An index of remoteness was constructed using a factor analysis. Households who live further away (expressed in travel time) from basic services such as the post office, the telephone, the road or the market have a higher index. The results indicate that larger distances to basic services are associated with lower expected levels of per capita consumption, especially in rural areas. The probability to suffer from hunger is also higher for households in the East and the Centre and for those who live in remote areas.

3.15   **Few people use public transport.** Given the importance of access to market and services for household welfare, how important is public transport in relieving the obstacles of isolation? In rural areas, 17 percent of the households never use public transport and fifty percent use public transport less than once a month. Table 34 below also reports the share of the population which finds the service satisfactory or good. Relative to what is being observed in urban areas and to ratings for other public services (see health chapter), rural users seem mitigated with respect to the frequency, the affordability and the punctuality of public transport. This may be an area of potential improvements but further research needs to be done.

Table 34: Use and satisfaction towards public transport, by area and quintile, in percent.

	All	Urban	Rural	Q1	Q2	Q3	Q4	Q5
Never uses public transport	16.7	14.8	17.1	18.8	21.7	15.0	14.8	13.0
Less than once a month	49.2	34.7	52.6	50.9	48.0	49.1	47.6	50.2
Less than once a week but at least once a month	22.6	24.9	22.1	24.1	21.0	24.3	25.3	18.3
At least once a week	11.6	25.5	8.3	6.2	9.4	11.6	12.4	18.5
Degree of satisfaction								
Frequency	88.9	97.0	86.9	84.9	86.2	90.8	89.6	92.4
Affordability (cost)	88.5	94.0	87.2	86.2	87.8	88.1	88.6	91.6
Punctuality	86.3	95.0	84.2	86.6	82.4	86.3	88.0	88.0

Source: BLSS 2003.

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3.16   **Households expect public actions in the areas of electrification, roads, agriculture and water supply**. Households were given the opportunity to tell the three most important actions the government should take for their own welfare. Table 35 reports the share of households having ranked as most important the following actions. For 24 percent of the population, the most important action should be expanding the electricity network[15]. This is followed by roads with 17 percent, agriculture with 15 percent and water supply with 10 percent. However, the priorities differ in urban and rural areas. Housing is the priority for one fourth of the urban population, and employment is the priority for 8 percent of them, immediately after water supply. Actions in the housing and social sectors are hoped by 10 percent of those in the first quintile, while richer households seem to have more interest in the credit and banking sectors.

Table 35: The most important action the government should take

	National	Urban	Rural	Q1	Q 2	Q 3	Q 4	Q 5
Electrification	24.2	6.1	28.5	24.2	22.4	26.1	24.8	23.4
Build roads	16.9	2.3	20.4	16.7	17.1	17.1	15.7	18.2
Water supply	10.3	9.4	10.5	9.5	12.9	10.9	9.1	8.9
Waste management	1.2	5.4	0.1	1.1	1.0	1.0	0.5	2.1
Building/improving schools	6.7	8.3	6.3	7.2	7.4	5.9	7.5	5.5
Agriculture	15.1	16.8	14.7	15.3	13.4	14.3	15.4	17.0
Health	1.8	1.9	1.8	0.1	2.8	1.5	2.5	2.2
Employment	2.1	8.3	0.6	1.3	2.1	2.4	2.1	2.6
Social	5.6	4.8	5.8	9.2	5.5	4.3	4.3	4.4
Credit and banking	5.7	8.3	5.1	3.9	5.1	6.1	6.7	6.9
Housing	8.7	23.7	5.1	10.4	8.1	7.9	9.8	7.2
Other	1.7	4.7	1.0	1.1	2.0	2.4	1.5	1.6

Source: BLSS 2003

III. POOR AND VULNERABLE GROUPS

3.17   Today, the incidence of poverty is similar across all age groups as all generations live under the same roof and as resources are pooled within the household. However, some groups (such as children) likely suffer more from poverty of the household (as a result of low education, employment type, or area of residence of household head). In the future, if jobs do not keep pace with labor force growth, increasing urbanization, and demographic developments, may make some groups (e.g. young adults and elderly) more vulnerable to poverty.

3.18   **Demographic pressures add to vulnerability for particular groups.** Combined with poverty and economic factors, demographic indicators explain some of Bhutan's current difficulties and reveal some challenges for the coming decades.

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[15] However, one can hope that the household simply did not choose the first action which was suggested to them from the list.

3.19   **Bhutan's population is remarkably young.** Figure 6 shows the age-sex pyramid for 2003 obtained from the BLSS. The pyramid reveals several interesting features and indicates potential challenges for the country. First, population remains remarkably young with the share of the population below 20 years as high as 46 percent. The pyramid indicates the existence of a phenomenon referred to by demographers as population momentum: a facet of the youthful age structures, the 5 to 19 year olds, is predominantly represented, which in turn reflect high birth rates in past decades coupled with important progress in the reduction of child mortality. This poses major challenges for policy-makers. It explains the current pressure on the education system and causes over-crowdedness in schools, resulting in school drop out and sometimes child labor. As those children reach working age they also create a pressure on the labor market, which explains the actual unemployment issues. But there is also an upside. A very high dependency ratio makes saving difficult for most working individuals and families. This problem should decrease as today's young adolescents reach working age, presenting the opportunity for greater savings and reducing poverty – as long as there are enough attractive job opportunities for them.

3.20   **Second, the base of the pyramid is shrinking, reflecting a strong decline in the pace of population growth**. The population growth rate decreased from 3.1 percent in the 90's to 2.5 percent since 2000, in line with the RGOB's willingness to control population growth. This evolution implies that the decrease in fertility rates is now higher than the decrease in child mortality rates. It is an indication that the current pressures on public services, such as the education system, is likely to decrease in the medium term.

3.21   **Third, the elderly represent less than 10 percent of the total population**. The changes in age structures resulting from declining child mortality create a one-time 'demographic gift', where the working age population has to support few elderly. However, in the long run, the share of the elderly is likely to increase with the estimated reduction in fertility, resulting in increasing pressure on the youth.

Figure 6: Male and Female Population by Age, 2003
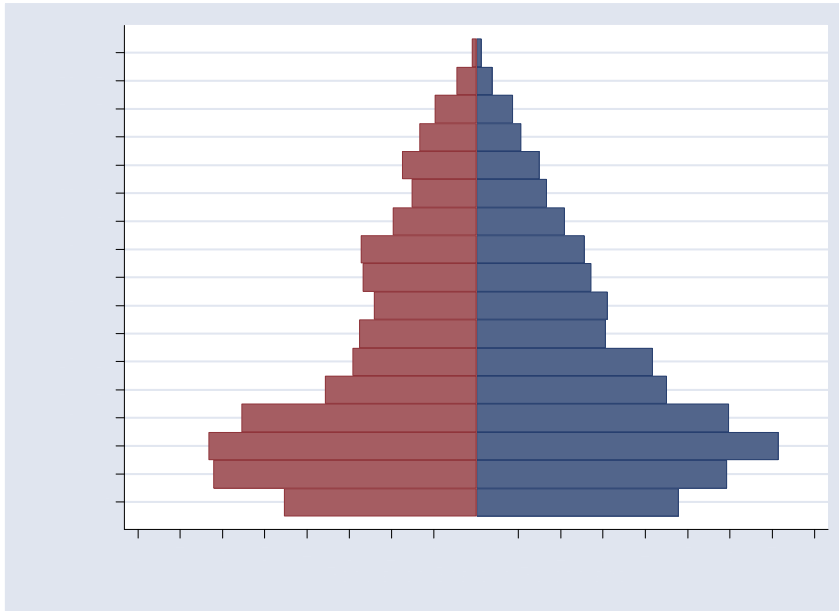
Children: hunger and work

3.22   **The BLSS indicates that some children are working, in the informal as well as in the formal sector. The incidence of work among teenagers is relatively high in rural areas.** Bhutan is not a member of the International Labour Organization (ILO) and is therefore not constrained by the ILO Convention 182 on the prohibition and elimination of the worst forms of child labor but it forbids the employment of children under the age of 18. However, the BLSS indicates[16] that some children are employed in the informal as well as in the formal sector. As shown in Figure 7, this affects mainly rural areas where 21 percent of the boys aged 10 to 14 and 59 percent of the girls aged 15 to 17 are working. As one can see from the Figure, the work incidence curves exhibit a rather smooth pattern rather than a discontinuity at the age of 18, which may be an indication that enforcement of the prohibition to work below the age of 18 is weak.

Figure 7: Incidence of work, 10 to 19 years old, by gender and area

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[16] The UNICEF 2003 report on the Protection of the Children also reveals that some children are employed in private enterprises and within homes as servants.
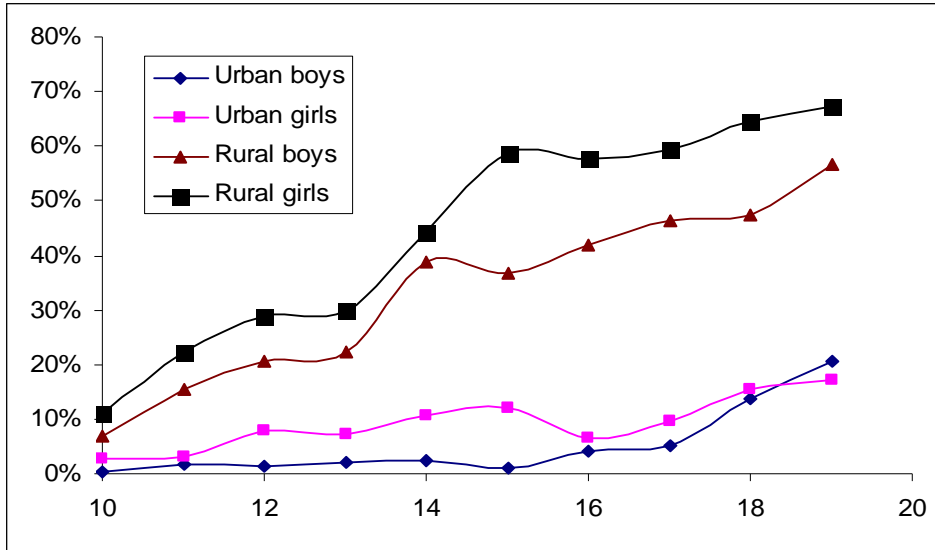
number of observations in each category. In urban areas, the majority of the girls are employed in the category "other" which most likely includes domestic work as servants.

Table 37: Sector of activity, by age, area and gender (in percent)

	Urban boys		Urban girls		Rural boys		Rural girls	
	10 to 14	15 to 17	10 to 14	15 to 17	10 to 14	15 to 17	10 to 14	15 to 17
Agriculture	7.9	14.8	2.6	8.2	91.2	94.1	95.0	96.0
Mining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manufacturing	5.2	0.0	1.3	6.7	0.0	1.2	0.0	0.0
Elec., gas, water	0.0	5.1	0.0	0.0	0.0	0.0	0.0	0.5
Construction	5.5	11.0	0.0	0.0	0.0	0.0	0.0	0.0
Retail trade	12.2	23.5	4.6	9.8	0.0	0.0	0.0	0.0
Hotel, restaurants	12.7	17.0	6.1	12.6	1.1	0.0	0.0	1.4
Transport	5.2	0.0	0.0	5.1	1.1	0.7	0.0	0.0
Finance, real estate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Insurance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Public administration	17.3	0.0	3.9	5.9	0.0	0.8	0.0	0.0
Education	0.0	2.8	1.1	0.0	0.7	0.0	0.0	0.0
Health, social work	0.0	0.0	5.1	5.1	0.0	0.0	0.0	0.0
Other	34.0	25.7	75.4	46.6	5.8	3.2	5.0	2.2
# Observations	13	13	53	37	126	146	158	185

Source: BLSS 2003.

3.25 **Work displaces schooling because of the difficulty to combine school and work**. As reported in Table 38, few children manage to combine school and work, both in urban and in rural areas. This is partly because large distances to school make it difficult for children to combine work and school (even in semi-urban areas), but may also be the result of the direct and indirect costs of schooling for poor households. Few children are also idle (the category "no work and no school"), except among the rural girls who may be too small to work or to walk long distances to school.

Table 38: Share of children working and type of activity by age, area and gender

	Urban boys		Urban girls		Rural boys		Rural girls	
	10 to 14	15 to 19	10 to 14	15 to 19	10 to 14	15 to 19	10 to 14	15 to 19
Work and school	0.1%	0.1%	0.2%	0.0%	0.1%	0.8%	0.2%	0.0%
Work and no school	0.7%	3.1%	3.7%	9.4%	21.0%	40.4%	16.1%	58.6%
No work and no school	8.7%	5.2%	10.0%	16.0%	8.3%	4.7%	23.8%	5.8%
No work and school	90.5%	91.6%	86.2%	74.6%	70.6%	54.2%	59.9%	35.7%

Source: BLSS 2003.

3.26 **This impossibility to combine work and school combined with low idleness means that the probability to go to school for a child who is not working is much higher than for a child who is working**. This difference in probability was estimated econometrically using bivariate probits and is reported in Table 39. In urban areas, for instance, the probability to go to school is 80 percent if a child is not working against only 3 percent if the child is working. In these circumstances, child labor is very detrimental to the child. Poor children who have to work, drop out of school at early ages, often before completion of the primary

cycle, and put their future at risk. In that way they also perpetuate poverty as they will probably have to send their own children to work later as well. Children with parents in agriculture are particularly more vulnerable to this issue; even if they start schooling, when harvest time comes, they must work in the fields. They drop out and do not return to school as it is too difficult to catch up. One possible solution could be to adapt the school rhythm to seasonal activities, an idea which has already been proposed to the RGOB by UNICEF. One difficulty, however, in holding classes in the winter instead of the summer is the low temperature, which makes walking to school and studying in cold classes problematic as well.

Table 39: Impact of work on schooling, children 15-19

	Urban	Rural
Probability of school if work	3.1%	0.9%
Probability of school if no work	79.7%	82.3%
Difference	76.6%	81.4%

Source: World Bank staff estimates using BLSS 2003.

3.27 **Some households suffer from hunger in Bhutan, particularly in rural areas**. Until very recently, Bhutanese were reluctant to accept the idea that some households may be poor or hungry. The recent BLSS investigates the issue of hunger through a direct question: "In the last 12 months, for how many months do you consider that you did not have sufficient food?" Table 40 reveals the results. Nationally, about 11 percent of the households declare suffering from hunger for two or three months per year. The incidence of hunger is higher in rural areas and particularly in the western region. This latter result is somehow surprising given that the West is the richest region according to indicators based on household consumption.

Table 40: Share of households suffering from hunger and self assessment, by area.

	No hunger	One month	Two/three months	Four months or more
National	79.9%	3.5%	11.1%	5.6%
Urban	98.2%	0.5%	0.8%	0.5%
Rural	75.5%	4.2%	13.5%	6.8%
West	73.1%	5.0%	14.0%	7.8%
East	87.2%	2.4%	8.0%	2.4%
Centre	80.8%	2.5%	10.6%	6.2%

Source: World Bank Staff using BLSS 2003.

3.28 **Multivariate regressions point out that remoteness is one of the factors causing hunger in rural areas**. Regressions (Table 62) confirm that the probability of suffering from hunger is higher in the West. Controlling for geographic location, remoteness increases the likelihood to suffer from hunger. Maybe paradoxically, households with a head is in agriculture (58.5 percent of the population) have a higher likelihood to suffer from hunger than those with a head in the industry or services sector. This is particularly true for those who work as independents on their own farms. Female-headed households and households owing a rice grinding machine (or "thri-tha") have a lower probability to suffer from hunger.

3.29   **Hunger and malnutrition are particularly onerous for babies and children whose growth requires a sufficient and very balanced diet**. It is likely that children living in households whose total calorie consumption lies below the required threshold are as affected as the other household members. Unfortunately, the BLSS does not say anything about intra-household food allocation and more research should be done to learn further about the impact of hunger on Bhutanese children in order to design appropriate policies. One program which currently addresses these issues indirectly is the school feeding program. This program, mostly financed by the World Food Program (WFP), provides one or two meals every day to day-scholars and boarder students[17]. This program also acts as an incentive for parents to send their children to school as the food transfer indirectly reduces the cost of schooling. This diet supplement is particularly important for children who have to walk long distances to school and need extra food intake to be able to concentrate in class. However, WFP will progressively terminate this program and it is not clear whether the RGOB is ready to fully compensate for this loss.

Youth: unemployment

3.30   **Unemployment is rising in urban centers as a consequence of migration from rural areas. This affects mainly the youth**. As Table 41 indicates, in urban areas, about 11 percent of the 20 to 25 years old men are unemployed and 5.4 percent are looking for work. By contrast, unemployment rate is only 2.5 percent for the men above 26 and below 60 and the share of men looking for work only 1 percent for the 26 to 35 and 0.5 percent for the 36 to 59. Employment statistics for women are not easy to interpret as housework is not well captured in the survey. However, about five percent of young women in urban areas are looking for a job against only one percent for the 26 to 35, and hardly anybody among the 36 to 59.

Table 41: Poverty and activity, by age group

	Male			Female		
	20-25	26-35	36-59	20-25	26-35	36-59
	Urban					
Poor	2.2%	3.2%	3.4%	2.5%	3.8%	2.9%
Work	64.2%	96.4%	95.4%	37.1%	40.8%	39.6%
No work	5.4%	1.5%	2.1%	45.1%	55.7%	54.3%
Search	5.4%	1.1%	0.5%	4.7%	1.3%	0.2%
Not in labor force	25.0%	1.0%	2.0%	13.2%	2.2%	5.9%
	Rural					
Poor	36.5%	35.7%	34.4%	38.5%	35.3%	33.5%
Work	77.7%	92.9%	91.8%	79.4%	89.1%	82.4%
No work	1.8%	2.3%	3.1%	9.6%	8.2%	11.7%
Search	0.6%	0.9%	0.4%	1.2%	0.5%	0.0%
Not in labor force	19.9%	3.9%	4.7%	9.7%	2.2%	5.9%

Source: BLSS 2003.

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[17] In 2003, WFP distributed meals to 18323 boys and 13564 girls. Out of those, 20759 were boarder students and 11175 day-students.

3.31   **The youth is a vulnerable group, particularly in urban areas**. Young men and women in urban areas have little education, face difficult employment conditions and yet already have family responsibilities. Table 42 reports some of their characteristics. Only a quarter of the urban male between 20 and 25 has completed primary education. About 11 percent of them are unemployed and only 82.6 percent of those who are out of school are working. The remaining 17 percent are idle or employed in temporary and seasonal activities. Women are also vulnerable as their education levels are typically low. For instance, the literacy[18] rate among urban young women is only 62 percent and only 20 percent have completed primary education. In rural areas, young men and women are probably less vulnerable as they are employed in traditional activities and are protected by their families and communities.

Table 42: Characteristics of the 20-25 years old

	Urban men	Urban women	Rural men	Rural women
Primary completed	26.5%	20.2%	39.0%	27.6%
In school	22.3%	11.1%	15.7%	6.3%
Literate	84.0%	62.4%	53.4%	30.4%
Highest grade reached*	8.39	8.72	5.62	5.54
Poor	2.2%	2.5%	36.5%	38.5%
Working	64.2%	37.1%	77.7%	79.4%
Not working	5.4%	45.1%	1.8%	9.6%
Looking for work	5.4%	4.7%	0.6%	1.2%
Not in labor force	25.0%	13.2%	19.9%	9.7%
Work if no school	82.6%	41.7%	92.2%	84.8%
Head	43.4%	9.2%	9.7%	6.0%
Spouse	3.5%	47.1%	3.5%	12.4%

Source: BLSS 2003. *For those who left school.

3.32   **Inactivity rates are relatively homogenous across ages in urban areas**. Figure 8 reports the inactivity, work, and school attendance rates for the 20-25 year old men. As discussed above, it is visible that inactivity rates are sensibly lower in rural areas. Figure 8 also indicates that inactivity rates are relatively equal across ages. This may be an indication that the size of the population constituting the inactive group is relatively stable and that those who leave school are quickly absorbed by the labor market, although this is only a hypothesis which should be tested with more accurate data on the length of unemployment.

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[18] Literacy is defined as being able to read and write in any existing language.

Figure 8: Activities of 20-25 years old men, urban rural areas
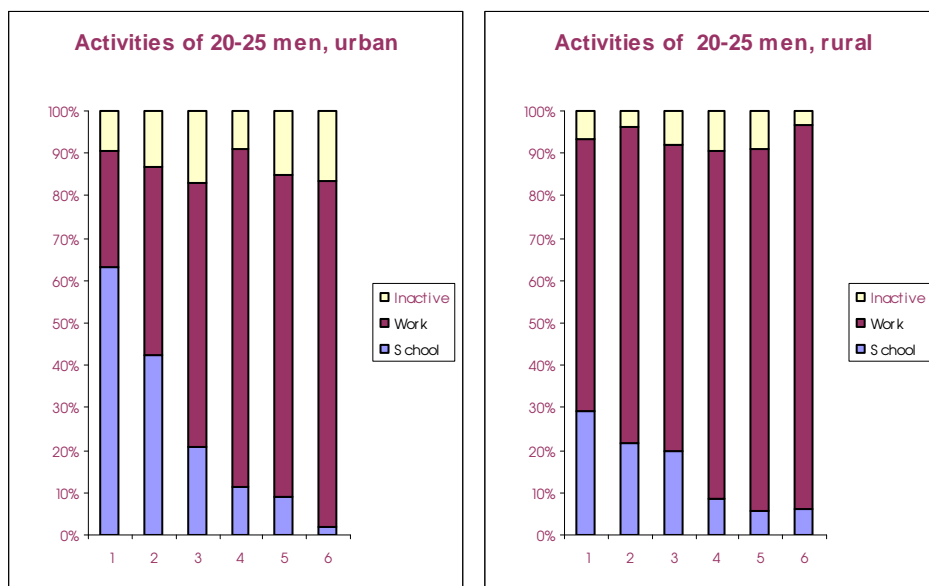
Source: BLSS 2003.

3.33 **In Bhutan, poverty and unemployment are different issues and are not always determined by the same characteristics**. It is probably more the nature of the work activity which is crucial to get out of poverty than the fact to be working or not. As we saw in the chapter devoted to the determinants of poverty, being unemployed is not necessarily associated with poverty as such. The incidence of poverty is in fact the highest among households working in agriculture, households in the East or households in remote areas; all characteristics which are also associated with a higher likelihood to be working. At present, the unemployment of the youth is not necessarily related to poverty as many young men and women still live with their parents. However, unemployment will jeopardize their future, particularly as many young men and women already are heads and spouses (mostly in urban areas), which increases their vulnerability and their likelihood to be poor[19]. For those who migrated from rural areas and who do not yet have a strong family and network support, unemployment is a factor of vulnerability. The growth of unemployed youths, unless addressed, may also pose social problems and undermine the natural tranquility and peace of the country.

3.34 **Education can be a protection against unemployment in urban areas.** Table 43 reports the results of a regression capturing the determinants of employment. The first two columns relate to all men and women between 17 to 25 years, while the last two columns relate only to those who have left school already. The last two columns are more informative regarding the choice of working versus being unemployed, while the first two columns relate more to the choice of working versus other activities including schooling. Men have a higher

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[19] Multivariate regressions show that households with young heads have an expected level of per capita consumption lower by 2 percent.

likelihood to work than women in both urban and rural areas but housework for women is not well captured anyway in the survey so that this result can not easily be interpreted. Men and women have a higher chance to work in the rural areas of the eastern and central regions than in the western region. More educated children have a higher chance to find work in urban areas than those with less education. But this effect is not observed in rural areas. What seems to be a determinant in rural areas is whether the father was working in agriculture, as opposed to industry or services or being inactive. Children from agricultural households are likely to be involved in farming and livestock themselves.

Box 7: The Ninth Five Year Plan and Employment

The RGOB is facing new challenges in the area of employment. As a result of the priority accorded to the education sector in the last decades, labor markets in urban areas become congested as graduating students leave their villages in the hope to find suitable jobs in the city. In addition, around 3,800 people migrate from rural to urban areas every year. The youth is reluctant to take blue-collar jobs but the employment in the public sector can not absorb the new cohorts and private sector has not fully developed yet. On the other hand, the private sector complaints about a mismatch between its needs and the skills and experience of the school leavers.

At the same time, the Plan identifies numerous cases of labor shortage in rural areas as a consequence of rural-urban migration. Households that lose a principal worker are extremely vulnerable.

Given those tensions on the labor markets, the RGOB recognizes the need to create additional employment opportunities through growth and private sector development. The strategy to create both farm and off-farm employment includes "land reforms, extension of credit facilities, crop diversification, rural infrastructure, development of improved marketing facilities and promotion of co-operative organizations with an aim to make rural life and employment more attractive to youth, assistance to enterprises to adapt to technological advances and changes in market conditions, encouraging the construction sector, and promoting service industries such as tourism". It is the mandate of the Department of Employment and Labor to define a strategy and work towards the resolution of those issues.

In order to support the private sector, the Plan foresees the strengthening of the regulatory environment, the improvement of the roads, the provision of business development advisory services, the support of pre-feasibility studies, the promotion of stronger partnership between the financial and private sector, the promotion of international trade, the promotion of education and VT, and further privatizations.

Table 43: Determinants of employment, 17-25 years, marginal impact

	All		Out of school	
	Urban	Rural	Urban	Rural
Man	0.219***	0.053**	0.405***	0.056***
Centre	0.021	0.061**	0.003	0.061***
East	-0.038	0.012	-0.014	0.060**
Age	0.308	0.119	-0.082	-0.004
Age2	-0.006	-0.002	0.003	0.000
Bhutanese	-0.186	-	-0.085	-
Literate	0.054	0.019	-0.027	-0.029
Number of completed grades	0.000	-0.075***	0.044***	0.012
Number of completed grades, squared	-0.001	0.001	-0.002	-0.002
Education of father	-0.001	-0.007	0.001	-0.004
Father in agriculture	0.027	0.312**	-0.009	0.204*
Father in industry or services	-0.061	0.196**	-0.098	0.068
Time to headquarter	0.001**	0.000	0.001**	0.000
Time to food market/shop	0.000	0.000	0.000	0.000
Time to bus station	0.000	0.000	0.001	0.000
Time to tarred road	NA	0.000	NA	0.000
Time to feeder road	NA	0.000	NA	0.000
Time to agricultural extension center	NA	0.000	NA	0.000
Observations	1681	1443	1155	1158

Source: World Bank staff using BLSS 2003. * Specification: probit.   *Stands for significant at a 10 percent level, ** at a 5 percent level and *** at a 1 percent level.

3.35 **The RGOB is interested in finding solutions for the growing unemployment of its young population, through both supply- and demand-side efforts.** On the demand side, the Government recognizes that private sector-led economic growth will be the main impetus for reducing growing unemployment among its young people. On the supply side, a key issue is improving the skills - through retaining children in school through secondary education, adaptation of secondary school curriculum to the needs of the private sector. In addition, the Government is keen to make labor laws more flexible and employment policies to reduce restrictions for young people in finding jobs. The MOL is also attempting to match labor supply and demand through job counseling, job information, and other ALMP-type programs. However, training and programs are effective (given mixed results worldwide) and not too costly.

The elderly

3.36 **The elderly constitute an active group of the Bhutanese society, keeping family responsibilities and working activities despite weaker health.** Table 44 reports some characteristics of the elderly (60 years and above). The elderly rarely live by themselves but rather share the living arrangements of their children or grandchildren. In urban areas, 50 percent of the men are still working. As expected, their health is weaker; about 32 percent of them report some illness against only 15 percent for the entire population, and 27 percent of them are having medication against 16 percent nationally.

Table 44: Characteristics of the elderly (60+)

	Men		Women	
	Urban	Rural	Urban	Rural
Living alone	4.2%	2.4%	8.3%	3.3%
Living with at least one child or grandchild	70.9%	68.4%	58.2%	59.1%
Household head	66.6%	61.9%	16.6%	38.5%
Household spouse	4.6%	14.3%	26.5%	27.0%
Poor	3.4%	33.5%	1.1%	36.1%
Work	49.9%	57.7%	10.8%	42.0%
No work	4.3%	3.9%	30.0%	8.8%
Search	0.4%	0.0%	0.0%	0.0%
Not in labor force	45.5%	38.4%	59.1%	49.1%
Sickness in last 4 weeks	24.2%	28.8%	34.8%	36.0%
Had medication in last four weeks	33.5%	24.4%	37.7%	29.2%
No need of medication	65.7%	73.4%	62.3%	67.5%
Need of medication but can not afford	0.0%	0.0%	0.0%	0.0%
Need of medication but not available	0.0%	0.6%	0.0%	0.4%
Need of medication but pharmacy too far	0.7%	0.4%	0.0%	0.6%
Need of medication, other reason	0.0%	1.1%	0.0%	2.4%

Source: BLSS 2003.

3.37 **The elderly are dependent on family support or on their own income.** Old age income security in Bhutan is mainly provided through support from the family, with the exception of the National Pension and Provident Fund (NPPF) that covers civil servants and the military and provides an annuity and a lump sum payment at retirement. However, the BLSS does inform on the three main sources of income for households with elderly. Table 45 below reports the results. Less than one percent of the households living with at least one elderly person rely on pensions as an important source of income. About 13 percent of them rely on remittances (against 9 percent for an average household). The surprising result of Table 45 relates to the sources of income of those households with elderly only. None of those households rely on pensions to survive. About half of them rely on remittances and/or on own farm income and others rely on wages, own business, inheritance, real estate operations or other sources. The category of households of elderly only being limited in the survey, one should be cautious in interpreting those numbers but those results certainly reflect the low coverage of the formal pension system and the importance of informal sources of income for those above 60 years

Table 45: Three main sources of income of the elderly

	All households	All households with elderly			Households with elderly only
		National	Urban	Rural	National
Wages	41.9%	31.5%	54.1%	30.0%	10.3%
Own business	14.5%	13.4%	37.7%	11.7%	15.7%
Own farm enterprise	61.8%	73.6%	14.2%	77.6%	46.5%
Remittances	8.8%	12.6%	9.7%	12.8%	46.4%
Pensions	0.6%	0.9%	2.6%	0.8%	0.0%
Rental/Real Estate	3.9%	4.6%	18.5%	3.7%	7.3%
Inheritance	1.0%	0.8%	0.2%	0.9%	5.3%

Charity	0.6%	0.9%	0.0%	1.0%	0.0%
Scholarships	0.1%	0.3%	0.0%	0.3%	0.0%
Selling of assets	5.5%	6.6%	4.8%	6.7%	3.8%
Others	12.9%	15.5%	8.0%	16.0%	21.5%

Source: BLSS 2003.

3.38 **The elderly may become a vulnerable group in the future**. As education, income and urbanization increase in Bhutan, traditional family systems may become less reliable a source for support. Modernization and demographic transition induce deep societal changes and Bhutan will have to answer a series of questions. How can existing schemes be changed to include more incentives for labor mobility? Should the existing (or reformed) pension schemes be expanded to the rest of the population? How should one design such schemes in a way which maintains informal and traditional structures? How is the age structure evolving in Bhutan and how should we prioritize between the needs of the children, the youth and the elderly within the current budget constraints? Is it necessary to develop separate safety net arrangements for the elderly poor that can complement income support from more traditional informal arrangements? How can the RGOB ensure the financial sustainability of the existing pension scheme and lay the foundation for a formal pension system that, once initial conditions and fiscal situation allow, can be extended?

IV. COPING STRATEGIES

3.39 In the absence of a formal social protection system and safety nets (outside of formal pensions for civil servants), Bhutanese rely on different strategies to cope with the difficulties of life. This section briefly explores some of these strategies.

Inter-household transfers

3.40 **Inter-household transfers in cash or in kind are one way for Bhutanese to redistribute to those in need.** In urban areas, about 41 percent of the Bhutanese send transfers. This proportion is smaller in rural areas. For the senders, those transfers constitute an important share of total household consumption: about 10 percent in urban areas and 5 percent in rural areas. Less people seem to receive transfers although households only declared whether transfers were for them a major source of income. It is possible that many households receive transfers but in such a small quantity that it has not been reported. What could be inferred, however, is that the net flow of transfers is a flow from urban to rural areas since more households are giving and less are receiving in urban than in rural areas. Not only are transfers a way to redistribute wealth between areas, it is also a way to redistribute between poor and non-poor, even within rural areas. Transfers are mostly sent to support a specific category of expenditure. For instance, in rural areas, 50 percent of the transfers have child support as an objective, and 24 percent are for food and clothing.

Table 46: Importance and use of transfers

	National	Urban	Rural	Q1	Q2	Q3	Q4	Q5
Sends transfers	27%	41%	24%	21%	21%	26%	30%	40%
Receives transfers	9%	4%	10%	9%	10%	9%	8%	9%
For those who send								
Total consumption	10203	13795	8779	4305	6007	7451	9967	17500
Transfers in cash	8493	15658	5652	3934	4280	6790	7322	15093
Transfers in kind	1249	1365	1203	458	652	841	1482	2073
Transfers, total	9741	17022	6855	4393	4932	7631	8804	17166
Share	6.9%	9.5%	5.4%	7.6%	5.9%	7.6%	6.1%	7.2%
Use of the transfers								
Child support	41%	21%	49%	44%	31%	44%	41%	43%
Medical	1%	0%	1%	0%	0%	1%	0%	1%
Wedding/funeral	2%	1%	3%	9%	1%	1%	2%	1%
Business	0%	0%	0%	0%	0%	0%	1%	0%
Food and clothing	21%	13%	24%	15%	25%	16%	28%	19%
Durable goods	1%	2%	1%	3%	1%	1%	0%	2%
Other	5%	8%	3%	2%	3%	4%	7%	6%
Multiple uses	28%	53%	18%	25%	39%	33%	21%	27%
Does not know	0.8%	0.9%	0.8%	2.4%	0.1%	0.0%	0.1%	1.4%

Source: BLSS 2003.

Temporary migration

3.41 **Migration could be another strategy to increase one's revenues and employment possibilities.** Nationally, about 12 percent of the population above 15 years of age spends more than a month per year away from the household. The household survey doesn't specify the reasons for this absence but one can presume it is mostly related to work as men are almost twice as much absent than women. The incidence of this temporary migration is identical in urban and rural areas or across regions. By contrast, migration is associated with higher levels of per capita consumption. The multivariate regressions presented in chapter 2 indicate for instance that, all else being equal, per capita consumption is higher by 6 percent in urban areas and by 20 percent in rural areas for households in which the head was absent for at least two months in the year preceding the survey. Those results, however, are simple correlations and nothing is known about the direction of the causality. One explanation for this positive correlation between income and migration could be that individuals who migrate may be able to generate an income which is higher than what they would have obtained at their place of origin. Another explanation could be that only better off households can afford traveling and leave their home or their land.

Table 47: Share of people who temporarily migrate, by area, gender and quintile

	Share of migrants (for those above 15 years old)
All	12.7%
Urban	12.6%
Rural	12.8%
Centre	12.6%
East	12.6%
West	13.0%
Man	17.8%
Woman	8.2%
Quintile1	9.5%
Quintile2	10.0%
Quintile3	10.8%
Quintile4	13.2%
Quintile5	19.1%

Source: BLSS 2003.

3.42 **Temporary migrants are more educated, and so were their parents. They work less and are predominantly employed in the service sector**. The BLSS does not provide a profile of the migrants before and after migration, which would allow us to make an assessment of the impact of migration and to understand whether migrants are better off because of migration or because they were able to migrate in the first place. However, there are some pre-existing individual characteristics, which are unlikely to have been modified by temporary migration. The education level of the parents is, for instance, unlikely to depend on their sibling's migration. The education level of the migrant himself is probably exogenous because this analysis only considers migrants older than fifteen and few adults would migrate for education purposes. The sector of activity is probably a good indicator as well as it is unlikely to be modified by migration, although this is more questionable. Table 48 indicates that migrants are more educated, and so were their parents. Migrants work less, and are more represented in the service sector and less in agriculture. There are no significant differences in family composition. This seems to indicate that those who migrate are better off before migration already. The poor, the illiterate and those working in agriculture do not take advantage of alternative employment opportunities. The less poor are those who migrate and who will benefit from it through higher revenues, reinforcing in that way social inequality. This interpretation is based on little evidence and should be further questioned. However, if it is true that the poor are not as mobile as the rich, this has policy implications. The first relates to the debate on whether one should increase the supply of public services in remote areas or instead invest in urban centers and simply let people move there. In the latter option, the poorest may not move to those urban centers and they could then be even more marginalized. Second, one may think of ways to help the poor relocating or becoming more mobile, although this may be particularly challenging for those in agriculture.

Table 48: Characteristics of the migrants (above 15 years)

	No migration	Migration
Has been to school	36.4%	63.8%
Literate	43.4%	72.7%
Years of schooling	2.7	5.5
Years of education of father	1.1	2.1
Years of education of mother	0.2	0.6
Age		
Household characteristics		
Number of babies	0.7	0.6
Number of children	1.3	1.3
Number of adults	3.8	3.9
No spouse	19.3%	20.4%
Head female	23.3%	23.3%
Poor	20.1%	14.5%
Per capita consumption	1855	2239
Work		
Working	65.2%	54.0%
Not working	16.6%	10.6%
Looking for work	0.9%	1.9%
Not in labor force	17.4%	33.5%
Sector of activity		
Agriculture	58.6%	36.7%
Industry	5.1%	7.2%
Services	36.3%	56.0%
Employment status		
Employee	26.8%	41.4%
Member cooperative	1.5%	1.6%
Own account worker	20.5%	18.3%
Employer	0.4%	0.5%
Family worker	47.4%	33.9%
Collective farmer	0.8%	0.7%
Other	2.7%	3.7%

Source: BLSS 2003.

Credit

3.43 **Borrowing could be another way for households to cope with poverty**. According to Table 49, about 42 percent of the Bhutanese have access to formal credit such as with commercial banks, and 43 percent have access to the Bhutan Development Finance Corporation (BDFC) or the Royal Insurance Corporation of Bhutan (RICB). Access is lower for those in the bottom of the income distribution with only 37 percent having access to private banks credits in the first quintile against 50 percent in the top quintile. Borrowing from relatives is very common. One fifth of the Bhutanese have debts with relatives. As expected, the poor have respectively less debts with banks and BDFC/RICB and relatively more debts with relatives than the non poor.

Table 49: Sources of credit and share of population with debts (in percent)

	National	Urban	Rural	Q1	Q2	Q3	Q4	Q5
Sources of credit available								
Banks	42.0	66.4	36.2	36.9	37.5	44.4	41.8	49.5
BDFC/RSCB	42.7	42.3	42.8	34.3	36.3	39.8	48.5	54.7
Relatives	72.9	59.4	76.1	82.6	76.3	71.6	69.4	64.6
Other	16.2	14.3	16.6	16.0	14.4	16.4	19.3	14.7
No access to credit	1.7	1.6	1.7	1.5	2.1	1.1	2.1	1.6
Debts								
Debts with bank	8.0	19.7	5.3	5.7	3.3	7.8	9.3	14.1
Debts with BDFC/RSCB	10.8	7.0	11.7	4.6	6.1	12.7	13.1	17.4
Debts with relatives	21.5	12.8	23.6	25.6	21.9	22.9	18.0	19.2
Debts with NGO	1.6	2.8	1.4	1.0	1.1	1.6	2.4	2.2

Source: BLSS 2003.

VIII. SUMMARY

3.44   The most effective way to reduce poverty is to promote economic growth, and to invest in human and physical capital. The BLSS being the first living standard survey, there is no way to estimate a poverty trend or the elasticity of poverty to growth in Bhutan. It is however possible to extrapolate what poverty could be in the next ten years under very simplistic assumptions. Under the hypothesis of constant inequality, using an average GDP growth rate of 5.5 percent per year[20] and a population growth rate of 2.5 percent, poverty would decrease from 31.7 percent to 9 percent in 2015. The impact of Tala, the second hydro-electric power plant, is expected to be considerable; without it poverty would still be as high as 14 percent nationally in 2015.

3.45   However, economic growth may not benefit everybody in the same way. The most likely scenario for the next decade is that growth will be driven by the public sector through its investment in the hydro-power industry. The RGOB has always been very good at investing its revenues in the supply of public goods. However, the poor may be less able to benefit from those public investments than the non poor as they appear to be less mobile to go to those places where remunerative jobs are created and public services are made available. Further, the poor are also less likely to benefit from the private sector growth as they are less educated and also have lower access to credit. This may cause inequality to increase, dampening the effect of growth on poverty.

3.46   Who are the poor and vulnerable in Bhutan? Poverty is a rural phenomenon and is more prevalent in the eastern part of the country and in some selected districts. The analysis confirmed the importance of two pillars of the Ninth Five Year Plan: access to land and access to goods and services. All else being equal, more land is associated with higher per capita consumption. Households living in remote areas are poorer, even when controlling for education and employment. Other factors are also associated with poverty: all else being

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[20] Per capita GDP growth rate should be higher in 2006 and 2007 with the introduction of the second hydro-electric power plant in Tala.

equal, households in agriculture or with little education are more likely to have lower levels of per capita consumption.

3.47   The BLSS has given some reasons to believe that there are other factors than distance to school which explain low attendance rates in Bhutan. One of those reasons is financial problems and the necessity for children to work. The data indicate that some children are employed in the informal as well as in the formal sector, especially in rural areas. With schools being far away from home and school schedules not being adapted to seasonal obligations, it is almost impossible for children to combine work and schooling. Hence children who must work are deprived from a complete education which will make them vulnerable for their entire life.

3.48   There are pockets of hunger in the country. Nationally, about 11 percent of the households declare suffering from hunger for two or three months per year. The incidence of hunger is higher in rural areas. Hunger and malnutrition are particularly onerous for babies and children whose growth requires a sufficient and very balanced diet. Several questions arise: should cash transfer or formal safety nets be instituted to prevent hunger of the very poor? Will reducing distance to services be enough? Should demand side safety net interventions be used to assist families place their children in school

3.49   The rapid expansion of the education system, demographic pressures and the difficulty of the private sector to develop, have caused unemployment problems in urban areas. The RGOB can no longer ignore the difficulties encountered by the youth once they leave school. However, to design efficient programs, it will be important to acquire more understanding of the current problems. Does information flow between employers and potential employees? Is vocational training well adapted to the needs of the private market? A key instrument for assessing labor market skills - such as enterprise surveys, labor force surveys - is weak, and also needs to be strengthened.

3.50   Rapid demographic changes, modernization and urbanization are likely to make the elderly a vulnerable group in the future. The current pension scheme may need to be made more financially sustainable. However, it is unclear whether the current pension system should extend to the entire population, whether the poor should be particularly taken care of through some other allocation mechanism, and how such schemes should be designed to be financially viable.

3.51   In the absence of formal safety nets, Bhutanese rely mostly on informal arrangement to cope with the difficulties of life. Funds are transferred from urban to rural areas and from quintiles in the top of the distribution to those in the bottom. However, poor households have less access to other sources of help such as temporary migration and formal credit. Whether these safety nets are adequate or need to be complemented by more formal schemes is a question that requires further work.

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ANNEX 1: EDUCATION

Table 50: Problems at school**, by age group and area

	6 to 12	13-14	15-16	17-19	13-19	>=20
	URBAN					
School is far*	13.2%	16.1%	19.3%	20.9%	18.6%	28.5%
Teachers absent	17.4%	19.6%	18.3%	16.7%	18.3%	14.8%
Teachers not competent	8.3%	8.3%	8.2%	6.8%	7.8%	7.1%
Books/supplies insufficient	4.4%	3.8%	4.6%	4.3%	4.2%	1.7%
Program irrelevant	2.3%	2.0%	1.9%	3.4%	2.4%	3.8%
Pupil/teacher ratio too high	45.2%	43.5%	43.0%	40.5%	42.4%	44.1%
Classrooms too small	14.1%	14.2%	13.1%	8.8%	12.2%	6.8%
Toilets bad	21.0%	18.6%	15.4%	12.4%	15.7%	11.9%
Boarding unsatisfactory	14.2%	25.7%	14.2%	10.9%	16.5%	12.2%
	RURAL					
School is far*	36.7%	34.0%	35.1%	30.7%	33.4%	30.6%
Teachers absent	19.0%	19.3%	18.5%	12.8%	17.2%	17.2%
Teachers not competent	3.7%	4.8%	3.3%	8.6%	5.4%	7.6%
Books/supplies insufficient	4.1%	2.9%	2.1%	3.0%	2.6%	3.9%
Program irrelevant	1.9%	0.6%	2.1%	1.5%	1.3%	1.3%
Pupil/teacher ratio too high	37.7%	42.9%	33.8%	36.7%	38.4%	41.3%
Classrooms too small	11.5%	15.0%	8.4%	12.5%	12.3%	8.4%
Toilets bad	15.1%	11.0%	9.9%	13.3%	11.4%	8.7%
Boarding unsatisfactory	12.0%	8.9%	5.2%	3.4%	5.6%	1.6%

Source BLSS 2003. * Defined as more than 30 minutes travel time from home to school in urban areas and more than 45 minutes in rural areas.** Multiple responses possible

Table 51: Problems at school**, by age group and gender

	6 to 12	13-14	15-16	17-19	13-19	>=20
	BOYS					
School is far*	30.6%	29.2%	33.0%	30.6%	30.9%	33.6%
Teachers absent	19.5%	20.7%	22.3%	15.4%	19.7%	14.7%
Teachers not competent	4.5%	6.1%	6.0%	8.4%	6.8%	8.2%
Books/supplies insufficient	4.9%	2.5%	2.9%	2.1%	2.5%	5.0%
Program irrelevant	2.7%	0.4%	2.2%	0.7%	1.1%	0.5%
Pupil/teacher ratio too high	42.9%	45.9%	38.9%	38.0%	41.2%	40.4%
Classrooms too small	13.2%	18.5%	10.2%	11.5%	13.6%	7.4%
Toilets bad	16.2%	14.8%	12.3%	12.7%	13.4%	9.6%
Boarding unsatisfactory	12.5%	11.5%	6.8%	5.2%	7.3%	4.0%

			GIRLS			
School is far*	29.1%	30.4%	29.1%	26.5%	24.7%	27.1%
Teachers absent	16.4%	17.5%	18.1%	12.3%	12.2%	14.8%
Teachers not competent	5.4%	5.5%	5.3%	2.8%	7.6%	5.3%
Books/supplies insufficient	3.6%	3.4%	3.8%	2.7%	4.8%	3.8%
Program irrelevant	1.7%	1.3%	1.5%	1.8%	3.7%	2.2%
Pupil/teacher ratio too high	36.7%	36.3%	40.2%	32.8%	37.7%	37.5%
Classrooms too small	10.9%	11.0%	11.1%	9.2%	11.4%	10.7%
Toilets bad	15.0%	17.2%	11.3%	10.2%	13.5%	11.6%
Boarding unsatisfactory	9.1%	12.0%	11.1%	5.6%	3.5%	7.0%

Source BLSS 2003. * Defined as more than 30 minutes travel time from home to school in urban areas and more than 45 minutes in rural areas.** Multiple responses possible

Table 52: Problems at school**, by age group and consumption quintile

	6 to 12	13-14	15-16	17-19	13-19	>=20
			Q1			
School is far*	26.0%	23.1%	18.8%	36.1%	25.6%	29.4%
Teachers absent	14.1%	16.0%	22.4%	7.1%	15.4%	7.9%
Teachers not competent	5.1%	2.9%	4.7%	6.3%	4.5%	9.6%
Books/supplies insufficient	2.5%	2.0%	1.1%	0.5%	1.2%	0.0%
Program irrelevant	2.3%	0.5%	1.1%	2.7%	1.3%	0.0%
Pupil/teacher ratio too high	29.0%	41.6%	34.4%	25.8%	34.5%	38.1%
Classrooms too small	8.9%	17.9%	11.3%	5.0%	11.8%	0.7%
Toilets bad	14.4%	14.0%	11.0%	6.1%	10.6%	4.8%
Boarding unsatisfactory	7.4%	6.6%	3.7%	1.5%	3.7%	10.9%
			Q2			
School is far*	31.3%	37.4%	40.6%	24.3%	35.2%	23.6%
Teachers absent	22.3%	21.0%	19.6%	15.6%	19.2%	3.5%
Teachers not competent	6.0%	7.4%	11.6%	8.9%	9.2%	7.8%
Books/supplies insufficient	5.0%	1.3%	3.3%	5.4%	3.0%	2.7%
Program irrelevant	1.0%	0.6%	1.7%	0.8%	1.1%	6.4%
Pupil/teacher ratio too high	39.3%	45.8%	30.3%	41.4%	39.4%	35.8%
Classrooms too small	11.1%	11.4%	4.9%	7.9%	8.3%	24.5%
Toilets bad	15.4%	11.9%	10.7%	9.4%	10.9%	20.1%
Boarding unsatisfactory	13.7%	18.8%	4.0%	4.4%	8.3%	12.5%
			Q3			
School is far*	37.4%	30.3%	23.9%	26.1%	27.1%	28.5%
Teachers absent	17.2%	19.6%	11.1%	14.2%	15.5%	9.9%
Teachers not competent	3.3%	3.9%	4.1%	5.7%	4.5%	7.5%
Books/supplies insufficient	1.5%	2.1%	2.0%	3.2%	2.4%	3.9%
Program irrelevant	1.9%	1.0%	0.0%	0.5%	0.5%	3.9%
Pupil/teacher ratio too high	40.6%	46.6%	43.2%	37.4%	42.9%	35.9%
Classrooms too small	14.2%	13.5%	6.1%	9.8%	10.2%	0.2%
Toilets bad	15.6%	13.0%	9.9%	11.5%	11.6%	0.4%
Boarding unsatisfactory	15.6%	8.9%	8.1%	2.7%	6.1%	1.6%
			Q4			
School is far*	30.9%	29.8%	33.1%	19.4%	27.7%	19.7%
Teachers absent	15.7%	19.9%	18.1%	12.8%	17.3%	11.8%

Teachers not competent	4.8%	6.3%	0.0%	7.4%	4.9%	3.5%
Books/supplies insufficient	6.0%	6.1%	4.4%	3.8%	5.0%	0.8%
Program irrelevant	2.8%	1.4%	0.4%	4.6%	2.1%	1.5%
Pupil/teacher ratio too high	42.6%	39.6%	37.2%	30.0%	36.2%	30.8%
Classrooms too small	12.3%	15.2%	15.2%	14.5%	15.0%	13.9%
Toilets bad	16.4%	14.4%	8.8%	15.4%	13.1%	3.9%
Boarding unsatisfactory	6.7%	12.5%	4.3%	8.2%	9.1%	0.0%
	Q5					
School is far*	26.9%	24.3%	34.1%	32.7%	30.1%	40.5%
Teachers absent	24.8%	19.9%	19.7%	18.9%	19.5%	34.3%
Teachers not competent	5.7%	7.4%	2.8%	11.3%	7.3%	8.6%
Books/supplies insufficient	6.3%	3.1%	3.1%	3.9%	3.4%	6.0%
Program irrelevant	1.9%	1.2%	6.2%	1.3%	2.7%	0.0%
Pupil/teacher ratio too high	48.0%	42.6%	38.6%	51.8%	44.4%	58.5%
Classrooms too small	14.6%	16.2%	11.2%	17.3%	15.0%	7.0%
Toilets bad	22.0%	11.9%	16.2%	19.9%	15.9%	18.4%
Boarding unsatisfactory	19.3%	10.1%	10.8%	5.5%	8.3%	1.1%

Source BLSS 2003. * Defined as more than 30 minutes travel time from home to school in urban areas and more than 45 minutes in rural areas.** Multiple responses possible

Table 53: Reasons for not going to school, by age and consumption quintile

	6 to 12	13-14	15-16	17-19	13-19
	Q1				
Not interested	5.8%	3.0%	14.0%	12.3%	8.4%
Cannot afford	25.6%	32.8%	26.0%	17.5%	27.2%
Needs to work	15.4%	23.2%	18.0%	21.4%	21.2%
Did not qualify	12.1%	0.0%	1.7%	0.0%	0.5%
School is too far	10.7%	11.2%	12.7%	8.7%	11.1%
Illness	3.1%	3.9%	0.0%	0.0%	1.8%
Too young/old	5.7%	0.0%	3.3%	2.1%	1.4%
Problems in home	5.2%	13.7%	13.5%	19.8%	15.1%
Other	16.3%	12.2%	10.8%	18.1%	13.2%
	Q2				
Not interested	7.6%	11.1%	10.9%	0.0%	8.6%
Cannot afford	23.3%	31.0%	21.7%	37.6%	28.4%
Needs to work	10.0%	14.8%	23.4%	26.4%	21.1%
Did not qualify	5.9%	3.2%	8.4%	7.3%	6.4%
School is too far	5.4%	5.2%	8.5%	10.6%	7.8%
Illness	4.7%	2.2%	0.2%	2.6%	1.4%
Too young/old	10.8%	0.0%	7.6%	0.0%	3.3%
Problems in home	8.0%	23.5%	4.9%	7.6%	11.9%
Other	24.3%	9.0%	14.4%	7.9%	11.1%
	Q3				
Not interested	11.8%	9.6%	10.5%	4.1%	9.0%
Cannot afford	35.8%	31.6%	30.1%	30.2%	30.5%
Needs to work	6.9%	15.0%	23.1%	12.4%	18.7%
Did not qualify	10.1%	8.2%	4.0%	9.2%	6.2%
School is too far	10.6%	0.0%	1.4%	1.6%	1.0%

Illness	1.5%	0.0%	0.0%	0.0%	0.0%
Too young/old	5.3%	0.0%	2.2%	0.0%	1.2%
Problems in home	4.0%	8.0%	12.3%	11.7%	10.9%
Other	14.0%	27.6%	16.4%	30.8%	22.4%
			Q4		
Not interested	8.4%	9.0%	11.5%	35.6%	17.2%
Cannot afford	30.7%	30.4%	20.8%	11.6%	20.9%
Needs to work	18.0%	20.2%	27.8%	21.2%	24.1%
Did not qualify	4.5%	4.6%	0.0%	1.7%	1.7%
School is too far	4.2%	5.4%	4.5%	3.0%	4.3%
Illness	4.5%	0.0%	5.0%	3.8%	3.4%
Too young/old	4.8%	6.8%	3.9%	4.0%	4.7%
Problems in home	8.9%	6.4%	7.9%	4.3%	6.6%
Other	16.0%	17.1%	18.6%	14.9%	17.2%
			Q5		
Not interested	0.2%	14.2%	6.5%	7.3%	9.5%
Cannot afford	37.3%	22.6%	29.6%	21.2%	25.2%
Needs to work	10.7%	30.4%	19.2%	28.6%	25.4%
Did not qualify	6.3%	2.8%	2.3%	11.8%	4.6%
School is too far	10.8%	0.0%	6.2%	0.0%	2.6%
Illness	1.5%	6.4%	4.9%	0.7%	4.5%
Too young/old	11.1%	0.0%	0.0%	0.0%	0.0%
Problems in home	7.3%	20.4%	17.1%	24.7%	20.0%
Other	14.8%	3.2%	14.2%	5.8%	8.3%

Table 54: Determinants of School attendance and Primary school completion, by age group and area.

	School 6-12	School 6-12	School 13-19	School 13-19	Primary school completion (13-19)	Primary school completion (13-19)
	Urban	Rural	Urban	Rural	Urban	Rural
Sex	0.022	0.120	0.133	0.177	-0.025	0.033
	[1.90]*	[4.43]***	[6.51]***	[6.29]***	[0.93]	[0.85]
Age	0.263	0.640	0.245	-0.114	1.479	1.194
	[9.00]***	[8.88]***	[2.56]**	[0.83]	[11.34]***	[6.08]***
Age, squared	-0.014	-0.032	-0.009	0.001	-0.044	-0.033
	[8.50]***	[8.23]***	[3.12]***	[0.34]	[10.86]***	[5.48]***
No father	-0.076	-0.108	-0.098	-0.091	-0.130	-0.025
	[1.65]*	[1.63]	[2.52]**	[1.64]	[2.15]**	[0.32]
No mother	-0.074	0.078	-0.138	-0.124	-0.080	-0.126
	[1.30]	[1.04]	[2.76]***	[1.96]**	[1.14]	[1.47]
West	0.049	-0.039	-0.026	0.020	-0.027	-0.101
	[2.80]***	[1.01]	[0.80]	[0.47]	[0.60]	[1.90]*
East	0.027	0.207	-0.035	0.078	0.035	0.064
	[1.49]	[4.85]***	[0.89]	[1.66]*	[0.70]	[1.04]
Number of young children	-0.033	0.081	-0.043	-0.043	-0.062	-0.114
	[1.67]*	[2.29]**	[1.19]	[1.09]	[1.11]	[2.21]**
Number of young children squared	0.008	-0.024	-0.006	0.006	0.017	0.023
	[0.94]	[2.06]**	[0.36]	[0.40]	[0.58]	[1.32]
Number of children	0.054	0.066	0.037	0.003	0.124	-0.028
	[2.63]***	[1.41]	[1.62]	[0.11]	[3.77]***	[0.73]
Number of children squared	-0.007	-0.009	-0.007	0.005	-0.024	0.011
	[1.82]*	[1.13]	[1.41]	[0.80]	[3.17]***	[1.35]
Number of adults	0.012	0.008	0.032	0.072	0.013	-0.024
	[0.67]	[0.25]	[1.19]	[1.92]*	[0.36]	[0.46]
Number of adults squared	0.000	0.003	-0.002	-0.004	-0.002	0.003

	[0.11]	[0.81]	[0.86]	[1.25]	[0.43]	[0.71]
No spouse	-0.022	0.050	0.033	0.038	0.018	0.045
	[0.74]	[1.31]	[0.89]	[0.83]	[0.33]	[0.74]
Head female	0.013	0.114	0.017	0.100	0.043	0.025
	[0.60]	[3.29]***	[0.47]	[2.51]**	[0.81]	[0.47]
Age of head	0.006	-0.002	0.035	0.008	0.024	0.009
	[1.85]*	[0.26]	[6.63]***	[1.02]	[3.04]***	[0.76]
Age of head, squared	0.000	0.000	0.000	0.000	0.000	0.000
	[1.93]*	[0.11]	[5.71]***	[0.99]	[2.42]**	[0.84]
Bhutanese	-0.058	-	0.092	-	-0.064	-
	[1.44]	-	[1.39]	-	[0.81]	-
Migration (2months+)	0.020	0.026	-0.003	-0.015	0.024	0.015
	[1.29]	[0.54]	[0.11]	[0.34]	[0.62]	[0.27]
Head is literate	-0.009	0.021	0.039	0.046	0.075	-0.027
	[0.52]	[0.55]	[1.17]	[1.13]	[1.75]*	[0.50]
# years education of head	0.001	0.011	0.002	0.058	0.029	-0.021
	[0.22]	[0.38]	[0.26]	[2.15]**	[2.56]**	[0.63]
# years education of head, squared	0.000	0.002	0.000	-0.006	-0.001	0.005
	[0.07]	[0.73]	[0.06]	[2.14]**	[0.96]	[1.26]
Spouse is literate	-0.020	0.089	-0.040	0.024	-0.019	-0.012
	[1.36]	[1.57]	[1.48]	[0.42]	[0.52]	[0.17]
Head is inactive	-0.031	-0.263	0.140	-0.135	0.126	-0.079
	[0.79]	[2.82]***	[3.30]***	[1.51]	[1.68]*	[0.74]
Head is employee	0.028	0.097	0.116	0.114	-0.010	-0.133
	[1.25]	[0.86]	[3.16]***	[1.02]	[0.18]	[1.20]
Head is independent	0.029	-0.021	0.080	-0.040	0.031	-0.026
	[1.29]	[0.54]	[2.24]**	[0.98]	[0.54]	[0.50]
Head in agriculture	-	-0.172	-	-0.056	-	-0.050
	-	[2.80]***	-	[0.83]	-	[0.66]
Number of hours of work per week, head	-0.001	-0.001	0.000	-0.001	0.001	-0.001
	[1.45]	[0.71]	[0.34]	[0.95]	[1.20]	[0.81]
Log of per capita consumption	0.044	0.155	-0.025	0.148	0.031	0.078

	[3.41]***	[5.30]***	[1.16]	[4.79]***	[1.05]	[2.05]**
Hectares of land owned	0.002	0.000	0.000	0.003	0.002	0.000
	[0.78]	[0.14]	[0.42]	[1.64]	[0.69]	[0.06]
Electricity	0.059	0.132	0.170	0.138	0.231	0.063
	[1.39]	[3.82]***	[2.54]**	[3.66]***	[2.69]***	[1.31]
Heating	-0.046	0.050	-0.059	0.048	0.116	-0.003
	[3.55]***	[1.49]	[2.49]**	[1.39]	[3.67]***	[0.07]
Teachers absent	-0.058	-0.139	0.082	-0.271	-0.066	-0.313
	[2.04]**	[1.66]*	[1.58]	[2.76]***	[0.96]	[2.17]**
Teachers not competent	0.015	0.413	-0.175	0.401	0.003	0.433
	[0.42]	[1.69]*	[2.84]***	[1.60]	[0.03]	[1.41]
Books and supplies insufficient	0.076	-0.184	-0.319	0.204	-0.070	-0.137
	[1.06]	[0.62]	[3.16]***	[0.69]	[0.50]	[0.35]
Program irrelevant	-0.172	1.016	0.832	-0.295	-0.423	0.519
	[1.26]	[1.86]*	[3.49]***	[0.52]	[1.50]	[0.70]
Too many children per teacher	-0.035	-0.035	-0.059	0.102	-0.047	0.022
	[1.61]	[0.48]	[1.50]	[1.26]	[0.84]	[0.19]
Classroom not spacious	0.017	-0.020	0.020	-0.010	0.057	0.145
	[0.40]	[0.14]	[0.26]	[0.07]	[0.54]	[0.69]
Toilets bad	-0.120	0.047	-0.017	-0.074	0.042	0.054
	[3.49]***	[0.40]	[0.26]	[0.64]	[0.49]	[0.34]
Boarding facility in the block	0.039	0.124	0.056	0.250	0.093	0.273
	[2.55]**	[1.97]**	[2.09]**	[3.52]***	[2.66]***	[2.34]**
Index of remoteness	-	-0.055	-	-0.041	-	-0.048
	-	[3.52]***	-	[2.38]**	-	[1.94]*
Observations	1988	1509	1663	1470	1448	861

Source: World Bank Staff using BLSS 2003. Standard errors are given in parenthesis. * stands for significant at a 10 percent level, ** at a 5 percent level and *** at a 1 percent level.

Table 55: Determinants of ever entering the school system, by area.

	Ever attending school (13-19)	Ever attending school (13-19)
	Urban	Rural
Sex	0.086	0.208
	[5.74]***	[7.54]***
Age	-0.038	-0.224
	[0.56]	[1.67]*
Age, squared	0.001	0.006
	[0.31]	[1.41]
No father	-0.096	-0.091
	[3.33]***	[1.66]*
No mother	-0.063	-0.147
	[1.91]*	[2.30]**
West	-0.005	0.047
	[0.22]	[1.17]
East	-0.014	0.059
	[0.51]	[1.30]
Number of young children	-0.051	0.019
	[2.10]**	[0.50]
Number of young children squared	0.002	-0.009
	[0.20]	[0.66]
Number of children	0.005	0.000
	[0.28]	[0.01]
Number of children squared	-0.001	0.004
	[0.37]	[0.57]
Number of adults	0.018	0.010
	[0.99]	[0.25]
Number of adults squared	-0.002	0.001
	[0.96]	[0.22]
No spouse	0.048	0.030
	[2.02]**	[0.69]
Head female	0.018	0.120
	[0.68]	[3.14]***
Age of head	0.019	0.007
	[5.42]***	[0.92]
Age of head, squared	0.000	0.000
	[4.77]***	[0.60]
Bhutanese	0.033	-
	[0.69]	-
Migration (2months+)	-0.006	0.040
	[0.33]	[0.92]
Head is literate	0.040	0.092
	[1.64]	[2.35]**
# years education of head	0.000	0.059
	[0.04]	[2.13]**

# years education of head, squared	0.000	-0.007
	[0.23]	[2.22]**
Spouse is literate	0.021	0.083
	[1.17]	[1.44]
Head is inactive	0.050	-0.130
	[1.49]	[1.38]
Head is employee	0.080	0.100
	[3.06]***	[0.91]
Head is independent	0.057	-0.077
	[2.49]**	[1.90]*
Head in agriculture	-	-0.007
	-	[0.11]
Number of hours of work per week, head	0.000	0.000
	[0.90]	[0.29]
Log of per capita consumption	-0.020	0.173
	[1.39]	[5.58]***
Hectares of land owned	0.000	0.002
	[0.30]	[1.13]
Electricity	0.057	0.139
	[1.20]	[3.78]***
Heating	-0.042	0.054
	[2.51]**	[1.58]
Teachers absent	0.077	-0.253
	[2.00]**	[2.69]***
Teachers not competent	-0.077	0.609
	[1.78]*	[2.38]**
Books and supplies insufficient	-0.135	0.360
	[1.87]*	[1.20]
Program irrelevant	0.379	-0.623
	[2.16]**	[1.10]
Too many children per teacher	-0.044	-0.024
	[1.58]	[0.30]
Classroom not spacious	0.129	0.099
	[2.27]**	[0.69]
Toilets bad	-0.089	-0.117
	[1.99]**	[1.01]
Boarding facility in the block	0.008	0.206
	[0.44]	[2.90]***
Index of remoteness	-	-0.043
	-	[2.68]***
Observations	1663	1470

Source: World Bank Staff using BLSS 2003. Standard errors are given in parenthesis. * stands for significant at a 10 percent level, ** at a 5 percent level and *** at a 1 percent level.

ANNEX 2: HEALTH

Table 56: Incidence of stunting and underweight

Year	Sex	Area	Age	Stunting	Underweight
1986-1988	All	National	<=5	56.1	37.9
1986-1988	All	Centre	<=5	49.8	25.9
1986-1988	All	East	<=5	63.6	42.4
1986-1988	All	South	<=5	54.6	44.3
1986-1988	All	West	<=5	49.6	25.7
1986-1988	Boys	National	<=5	57.2	37.6
1986-1988	Girls	National	<=5	54.9	38.3
1999	All	National	0.5 to 4.99	40.0	18.7
1999	All	Centre	0.5 to 4.99	34.9	NA
1999	All	East	0.5 to 4.99	47.7	NA
1999	All	South	0.5 to 4.99	31.1	NA
1999	All	West	0.5 to 4.99	33.6	NA
1999	Boys	National	0.5 to 4.99	42.8	20.1
1999	Girls	National	0.5 to 4.99	37.7	17.2
1999	All	National	0.5 to 0.99	16.9	7.6
1999	All	National	1	40.0	20.1
1999	All	National	2	36.1	20.9
1999	All	National	3	47.1	19.9
1999	All	National	4	53.3	20.8
1999	Boys	National	0.5 to 0.99	25.0	9.5
1999	Boys	National	1	43.8	23.0
1999	Boys	National	2	43.6	21.8
1999	Boys	National	3	50.5	19.7
1999	Boys	National	4	56.1	22.5
1999	Girls	National	0.5 to 0.99	9.1	5.7
1999	Girls	National	1	36.0	16.9
1999	Girls	National	2	38.4	20.1
1999	Girls	National	3	43.9	20.1
1999	Girls	National	4	50.5	19.0

Source: WHO Global database on child growth and malnutrition, July 2000

Table 57: Prevalence of Underweight, 1990-2002

	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001
South Asia	64		62	53				47		47		
Afghanistan								49				
Bangladesh	66		68			57		56			48	52
Bhutan										19		
India				52						47		
Maldives					39	43			45			
Nepal						49			47			48
Pakistan		40			40	38						
Sri Lanka				38		33						

Source: "The Nutrition MDG Indicator. Interpreting Progress", using WHO, DHS, World Bank, May 2004.

ANNEX 3: SOCIAL PROTECTION

Table 58: Poverty incidence, by district.

	Population share		Poverty	
	Urban	Rural	Urban	Rural
Chukha	18.6%	6.6%	1.1%	23.8%
Ha	1.1%	1.6%	0.0%	0.0%
Paro	1.6%	4.7%	0.0%	0.0%
Thimphu	43.9%	4.0%	3.0%	3.9%
Punakha	2.4%	2.6%	0.0%	25.3%
Gasa	0.2%	0.4%	0.0%	13.9%
Wangdi	3.4%	6.6%	9.7%	7.1%
Bumthang	1.1%	2.5%	0.0%	27.8%
Trongsa	1.2%	3.9%	4.7%	30.3%
Zhemgang	1.4%	4.0%	19.7%	50.1%
Lhuntshi	0.7%	3.9%	15.5%	33.3%
Mongar	1.0%	9.2%	14.7%	70.6%
Trashigang	2.8%	14.7%	24.7%	36.1%
Yangtse	1.1%	6.5%	17.7%	62.3%
Pemagatshel	0.6%	5.3%	3.6%	58.6%
Samdrup Jongkhar	4.5%	0.0%	4.1%	
Samtse	6.3%	12.0%	5.2%	53.1%
Sarpang	6.2%	0.0%	4.5%	
Tsirang	1.2%	5.8%	0.0%	41.5%
Dagana	0.6%	5.8%	9.3%	43.0%

Source: BLSS 2003.

Box 8: The use of multivariate regressions to analyze the determinants of poverty

While it is standard to provide a poverty profile in a report on poverty, it is better to provide regressions that give insights into the determinants of poverty. A poverty profile is a set of tables giving the probability of being poor according to various characteristics, such as the area in which a household lives or the level of education of the household head. The problem with a poverty profile is that while it gives information on who are the poor, it cannot be used to assess with any precision what are the determinants of poverty. For example, the fact that households in some areas have a lower probability of being poor may have nothing to do with the characteristics of those areas as such. The differences in poverty rates between areas may be due to differences in the characteristics of the households living in the various areas, rather than to differences in the characteristics of the areas themselves. To sort out the determinants of poverty and the impact of various variables on the probability of being poor, regressions are needed. The caveat is that not all variables which have an impact on poverty are measurable or available so that caution is still needed when interpreting the results.

To assess the impact of various characteristics on the probability of being poor, it is better to rely on linear rather than categorical regressions. Many analysts use categorical regressions such as probits and logits to analyze the determinants of poverty. These regressions assume that the (equivalent) consumption of households is not observed: the analyst only knows whether a household is poor or not. There are three problems with these regressions. First, the analyst is throwing away relevant information (the distribution of consumption). Second, the regression coefficients are more likely to be biased with categorical regressions than with linear regressions. Third, when categorical regressions are used, it is not possible to predict the change in the probability of being poor following a change in the poverty line. Separate regressions are provided for the urban and rural sectors. Apart from a constant, the regressors include: (a) household size variables and their square (number of infants, children, and adults), whether the household head is a woman, the age of the head and its square, whether the head has a spouse or not, and the migration status of the head; (b) characteristics of the household head and spouse, including his/her level of education; whether he/she is employed, unemployed and searching for work, or not working; his/her sector of activity; his/her position; (c) geographic location according to Bhutan's 3 geographical regions (the region West being the omitted reference area); and finally the time to various services. Table 59 to Table 62 report the results.

Categorical regressions, however, could be useful when assessing subjective perceptions of poverty. As mentioned before, when analyzing the determinants of poverty, linear regressions provide more accurate information than categorical ones. However, if subjective information on poverty is available (i.e., we know if individuals suffer from hunger), it is useful to compare the determinants of being poor and the determinants of feeling poor using categorical regressions. Bhutan's BLSS survey allows us to identify those households who in 2003 have insufficient food to cover for the household food needs, according to their self perception. With such information on hand, we use probit regression models defining our latent variable to be one if the head feels his/her household do not have enough food to satisfy their needs. Then, we compare these results with a similar experiment where we define our latent variable to be one if the household consumption level falls below the poverty line. Results of the categorical regression on poverty are presented respectively in columns 3 and 5 (for urban) and 4 and 6 (for rural) of the specification output we will present below.

With the exception of the impact of geographic location on poverty, the results for the linear regression presented in this section are independent of the choice of the poverty lines and price deflators used for poverty measurement. As already mentioned, one advantage of using linear regressions for measuring poverty is that when the poverty lines/price deflators are region-specific as they typically are (for example, one may have a different poverty line for urban and rural areas, or by department within the urban and rural sectors), only the constant and/or the coefficients of the regional dummy variables in the regression will change with a change in the poverty line or price deflators. With linear regressions, it is thus feasible to predict poverty for any poverty line chosen by the analyst without having to rerun a new regression for each poverty line chosen (this is not the case with probits or logits where a new regression is needed for each new poverty line). We focus below on the percentage increase in per capita consumption associated with household characteristics, rather than on the impact on poverty because this impact depends on the initial position of the household. For example, the impact of a better education on the probability of being poor will be lower for a household who is further below from the poverty line than for a household who is closer to the poverty line. The fact that we concentrate on the impact on per capita consumption also means that the results in this section do not depend on the choice of the poverty line.

For the categorical regressions, we do not present the value of the coefficient but the marginal impact of the variable in the discrete change of the latent variable from zero to one (from poor to non-poor). Without manipulation, the magnitude of the coefficients resulting from a probit regression model does not have a straight forward interpretation. Therefore, an alternative is to present the marginal effect that a given variable has on changing an average household from the status of being poor to being non-poor. In this respect, a reported value of 0.15 for a given variable X, for example, means that by increasing X by a unit, the probability of changing status from poor to non-poor would change by approximately 15 percent.

Table 59: Impact of household composition on per capita consumption (in logarithm), on poverty and on hunger

	PCC +	PCC +	Poor	Poor	Hunger	Hunger
	Urban	Rural	Urban	Rural	Urban	Rural
Number of young children	-0.2419	-0.2179	0.0038	0.1165	0.0054	0.0029
	[6.50]***	[5.67]***	[2.71]***	[3.76]***	[1.53]	[0.10]
Number of young children squared	0.0268	0.0288	-0.0001	-0.0094	-0.0021	0.0081
	[1.63]	[2.04]**	[0.27]	[0.83]	[1.26]	[0.77]
Number of children	-0.2371	-0.1785	0.0042	0.0979	-0.0021	0.0452
	[9.65]***	[6.32]***	[3.62]***	[4.11]***	[1.26]	[2.05]**
Number of children squared	0.0248	0.0131	-0.0005	-0.0036	0.0009	-0.0038
	[3.63]***	[1.78]*	[1.65]*	[0.58]	[2.47]**	[0.68]
Number of adults	-0.2300	-0.1122	0.0002	0.0427	-0.0038	-0.0235
	[7.02]***	[3.50]***	[0.17]	[1.55]	[1.18]	[0.93]
Number of adults squared	0.0175	0.0035	0.0001	0.0008	0.0002	0.0017
	[4.14]***	[1.01]	[0.57]	[0.28]	[0.59]	[0.64]
No spouse	0.2144	0.0067	0.0012	-0.0187	-0.0031	0.0861
	[2.71]***	[0.07]	[0.30]	[0.22]	[0.67]	[0.92]
Head female	0.0664	0.0946	-0.0007	-0.0586	-0.0020	-0.1457
	[1.72]*	[2.77]***	[0.33]	[2.09]**	[0.73]	[5.64]***
Age of head	0.0237	0.0155	-0.0003	-0.0112	0.0003	-0.0045
	[3.95]***	[2.32]**	[1.04]	[2.01]**	[0.62]	[0.86]
Age of head squared	-0.0002	-0.0001	0.0000	0.0001	0.0000	0.0000
	[2.30]**	[2.15]**	[1.05]	[2.17]**	[0.29]	[0.81]
Bhutanese	0.2964		-0.0385		-0.0158	
	[5.52]***		[2.65]***		[1.85]*	

Source: World Bank staff using BLSS 2003. Standard errors are given in parenthesis. * stands for significant at a 10 percent level, ** at a 5 percent level and *** at a 1 percent level. + Per Capita Consumption

Table 60: Impact of education on per capita consumption (in logarithm), on poverty and on hunger**

	PCC +	PCC +	Poor	Poor	Hunger	Hunger
	Urban	Rural	Urban	Rural	Urban	Rural
Head is literate	0.2170	0.0639	-0.0019	-0.026	-0.0063	-0.0558
	[5.72]***	[1.53]	[1.29]	[0.76]	[1.65]*	[1.78]*
Number of years education of head: 0<E<=3	-0.0828	-0.1562	0.0013	0.1209	-0.0031	0.1234
	[1.57]	[2.16]**	[0.67]	[1.87]*	[1.01]	[2.04]**
Number of years education of head: 4<=E<=6	0.0007	0.1104	-0.0014	-0.112	0.0039	0.0330
	[0.02]	[1.29]	[1.17]	[1.57]	[0.94]	[0.46]
Number of years education of head: 7<=E<=8	0.0492	0.2498	-0.0044	-0.141	-0.0027	0.0212
	[1.10]	[1.77]*	[2.78]***	[1.40]	[0.81]	[0.23]
Number of years education, head: 9<=E<=10	0.2604	0.4122	NA	NA	NA	NA
	[6.25]***	[3.43]***	NA	NA	NA	NA
Number years education of head: 11<=E<=12	0.4179	0.3525	NA	NA	NA	NA
	[7.79]***	[1.80]*	NA	NA	NA	NA
Number years education of head: 13<=E<=15	0.4856	0.5126	NA	NA	NA	NA
	[7.92]***	[0.90]	NA	NA	NA	NA
Number of years education, spouse: 0<E<=3	-0.0425	-0.0318	-0.0011	0.0749	0.0200	-0.0787
	[0.68]	[0.29]	[0.55]	[0.78]	[2.14]**	[0.94]
Number years education of spouse: 4<=E<=6	0.0255	0.0307	-0.0034	-0.067	-0.0042	-0.0890
	[0.61]	[0.25]	[2.75]***	[0.68]	[1.49]	[1.04]
Number years education of spouse: 7<=E<=8	0.1211	-0.1445	NA	NA	NA	NA
	[2.49]**	[0.81]	NA	NA	NA	NA
Number years education, spouse: 9<=E<=10	0.1379	0.0247	NA	NA	NA	NA
	[2.87]***	[0.15]	NA	NA	NA	NA
Number years education, spouse: 11<=E<=15	0.1388	-0.1450	NA	NA	NA	NA
	[1.87]*	[0.36]	NA	NA	NA	NA
Education of father of head	0.2170	0.0639	-0.0019	-0.026	-0.0063	-0.0558
	[5.72]***	[1.53]	[1.29]	[0.76]	[1.65]*	[1.78]*
Education of father of spouse	-0.0828	-0.1562	0.0013	0.1209	-0.0031	0.1234
	[1.57]	[2.16]**	[0.67]	[1.87]*	[1.01]	[2.04]**

Source: World Bank staff using BLSS 2003. Standard errors are given in parenthesis. * stands for significant at a 10 percent level, ** at a 5 percent level and *** at a 1 percent level. Missing education levels for the probit specification have been coded together with the previous education level because of the small number of observations with high education levels. + Per Capita Consumption

Table 61: Impact of employment characteristics on per capita consumption (in logarithm), poverty and hunger

	PCC +	PCC +	Poor	Poor	Hunger	Hunger
	Urban	Rural	Urban	Rural	Urban	Rural
Head is not working/ looking for job	0.0667	0.0785	-0.0019	0.0920	0.0035	-0.0859
	[0.73]	[1.03]	[1.08]	[1.30]	[0.47]	[1.49]
Head not in labor force	0.0684	0.1189	-0.0025	0.0258	-0.0003	0.0648
	[0.66]	[1.88]*	[1.67]*	[0.47]	[0.05]	[1.24]

Head is in public sector	-0.1737	-0.0079	0.0038	-0.0705	0.0027	0.0151
	[6.22]***	[0.07]	[2.88]***	[0.66]	[1.15]	[0.14]
Head in industry	0.0094	0.2350	-0.0017	-0.1287	0.0067	-0.1866
	[0.12]	[1.97]**	[0.96]	[1.42]	[1.02]	[2.34]**
Head in services	0.1591	0.3038	-0.0092	-0.1614	-0.0113	-0.1597
	[2.11]**	[4.02]***	[1.92]*	[2.87]***	[1.59]	[2.69]***
Number of hours of work/week, head	0.0029	0.0031	0.0000	0.0003	0.0001	-0.0003
	[4.11]***	[3.43]***	[1.55]	[0.37]	[0.86]	[0.43]
Spouse not working/looking for job	0.0348	0.0059	0.0010	0.0240	-0.0105	-0.0133
	[0.62]	[0.11]	[0.52]	[0.54]	[2.87]***	[0.33]
Spouse not in labor force	0.1330	0.1150	0.0009	-0.0532	-0.0033	-0.0676
	[1.54]	[1.84]*	[0.26]	[1.12]	[1.06]	[1.44]
Spouse is in public sector	-0.0432	-0.1357	0.0029	0.0272	-0.0001	-0.1117
	[0.85]	[0.95]	[0.84]	[0.18]	[0.03]	[0.75]
Spouse in industry	0.0466	0.0827	-0.0003	-0.1891	-0.0034	-0.0223
	[0.61]	[0.54]	[0.10]	[1.58]	[1.33]	[0.17]
Spouse in services	0.1712	0.1325	-0.0014	-0.0253	-0.0032	-0.0961
	[2.67]***	[1.59]	[0.67]	[0.33]	[1.11]	[1.27]
Father of head was in agriculture	-0.0432	-0.0359	0.0031	0.0320	-0.0116	-0.0103
	[1.14]	[0.47]	[1.60]	[0.50]	[2.09]**	[0.16]
Father of spouse was in agriculture	-0.0162	-0.0683	0.0017	0.0100	0.0059	0.0926
	[0.36]	[0.73]	[0.87]	[0.12]	[1.35]	[1.14]
Hectares of land owned	0.0016	0.0018	-0.0004	-0.0067	-0.0002	-0.0006
	[2.96]***	[2.62]***	[1.37]	[2.49]**	[0.40]	[0.38]
Migration (2months+)	0.0620	0.1931	0.0007	-0.1037	-0.0040	-0.0867
	[2.12]**	[4.35]***	[0.53]	[2.89]***	[1.74]*	[2.63]***

Source: World Bank staff using BLSS 2003. Standard errors are given in parenthesis. * stands for significant at a 10 percent level, ** at a 5 percent level and *** at a 1 percent level. + Per Capita Consumption

Table 62: Impact of location and remoteness on per capita consumption (in logarithm), poverty and hunger

	PCC +	PCC +	Poor	Poor	Hunger	Hunger
	Urban	Rural	Urban	Rural	Urban	Rural
Centre	-0.1243	-0.1289	0.0048	0.0337	0.0079	-0.1334
	[4.76]***	[3.88]***	[2.82]***	[1.15]	[2.74]***	[5.47]***
East	-0.3156	-0.4024	0.0206	0.2609	-0.0010	-0.2026
	[11.60]***	[11.25]***	[6.47]***	[7.83]***	[0.38]	[8.02]***
Index of travel time to services	-0.0349	-0.0869	0.0013	0.0500	0.0012	0.0334
	[3.02]***	[6.10]***	[3.19]***	[4.51]***	[1.39]	[3.14]***

Source: World Bank staff using BLSS 2003. Standard errors are given in parenthesis. * stands for significant at a 10 percent level, ** at a 5 percent level and *** at a 1 percent level. + Per Capita Consumption