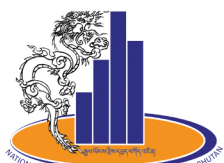
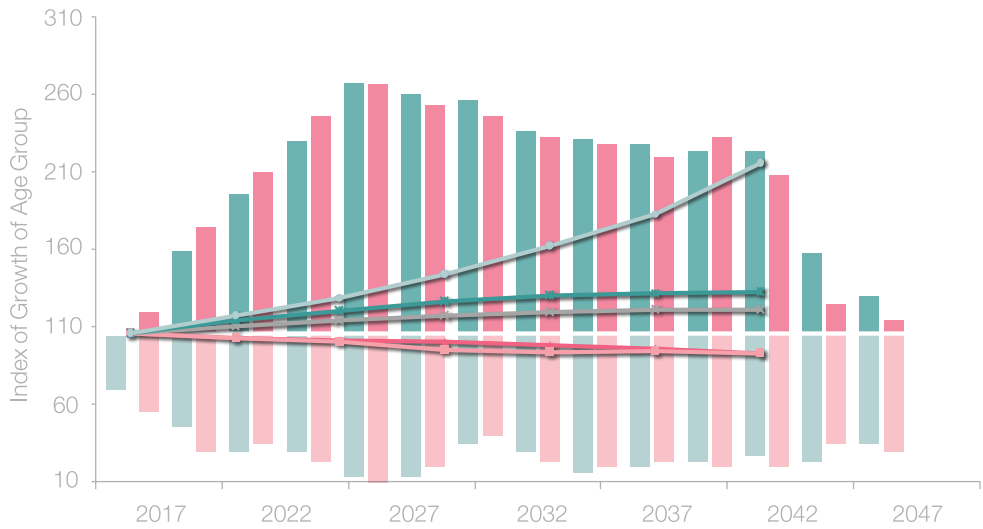


HARNESSING DEMOGRAPHIC DIVIDEND IN BHUTAN



NATIONAL STATISTICS BUREAU





HARNESSING DEMOGRAPHIC DIVIDEND IN BHUTAN

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FOREWORD

With the rapid decline in the Total Fertility Rate (TFR) and increase in life expectancy at birth, the share of working-age population has increased over time. This is the period, when the country will have an opportunity to boost the economy taking advantage of the large number of labour force. This in demographic term is known as the Demographic Dividend or the window of opportunity. The demographic dividend would last for only a few decades and eventually close with the increase in the share of elderly population or the aged-dependents.

As a part of post-census thematic analytical reports, the National Statistics Bureau has taken the initiative to study the demographic dividend both at the national as well as the sub-national level.

In doing so, a detailed analysis of dependency ratio and the total labour force was carried out. Where required, some policy recommendations are also provided.

We are hopeful that the findings in this report will serve as a rich source of information for researchers, policy makers, planners and the academia.

(Chhime Tshering)

Director

National Statistics Bureau

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Moreover, we would like to acknowledge the contributions of the following:

Advisory Team: Chhime Tshering, Director, National Statistics Bureau, and Tashi Dorjee, Chief Statistical Officer, Social Statistics Division.

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ABBREVIATIONS

BLSS	-	Bhutan Living Standard Survey
BMIS	-	Bhutan Multiple Indicator Survey
CBR	-	Crude Birth Rate
CDR	-	Crude Death Rate
GDP	-	Gross Domestic Product
LFPR	-	Labour Force Participation Rate
LFS	-	Labour Force Survey
NHS	-	National Health Survey
NRI	-	Natural Rate of Increase
NSB	-	National Statistics Bureau
PHCB	-	Population and Housing Census of Bhutan
SDG	-	Sustainable Development Goal
TFR	-	Total Fertility Rate
UNFPA	-	United Nations Fund for Population Activities
UNWPP	-	United Nations World Population Prospects

Chapter 1: Background

1.1 Introduction

Sustainable development can only be achieved when all men, women, girls and boys enjoy their health and rights, engage in decent work and livelihood and contribute to the country's economic growth. This requires strategic policy focus and investments to attain the development goals in future. In turn, the government need to know the size of population along with its age-sex structures and other characteristics of the future population, to plan for an inclusive overall growth without leaving any one behind.

Demographic transition, especially decline in fertility, leads to changes in the age structure of a population, which can have a large effect on economic growth. A country with anticipated demographic advantage of increasing working-age population and low proportion of young dependents may reap the benefits of good health, quality education and decent employment which in turn would result

into economic advantage. This is also commonly known as the demographic dividend or a demographic window of opportunity. The demographic dividend would last for certain number of years, and when this window of opportunity is passed, the dividend is no longer available and will not be repeated.

The demographic advantage is achieved first at the household level, mainly due to decline in fertility and having less number of children. The smaller share of children enables greater investment per child, particularly for health care, nutrition, education and skills. The future entrants into the labour force will have better productivity, and is likely to boost per capita income. This can also lead to increase in savings that can be used for new investment for added returns as well as to secure old age. Such payoff can be substantial, if we aggregate them at the national level and this situation leads to a demographic dividend.

The main factor behind the occurrence of demographic dividend in any nation is the increase in workforce due to the children born during high fertility regime in the past and when they enter into the labour force. Another factor which comes out as by-product of fertility decline is, when the women have fewer children to take care and they are free to take up jobs outside of the home and tend to be better educated than their old cohorts and as a result they are more productive while engaged in the job¹.

It is clear that demographic changes open up new economic opportunities and brings a potential growth in a country's economy, resulting from a change in the age structure of its population and realization of benefits is not automatic. This depends on the implementation of suitable and effective policy and programmes. It requires systematic investment on multiple front with many pre-requisites. Most importantly, population prospects, changing age structure in future and appropriate policies and programmes are needed to reap the benefits. Therefore, this report examines recent trends, and critically discusses the likely impacts and benefits of the demographic change in Bhutan.

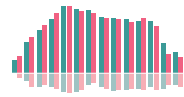
1.2 Objectives

The main objective of this report is to analyze the period of window of opportunity in Bhutan at the national as well as at the sub-national levels and to examine future prospects of the working-age population. Further, the report also estimates the likely size of the economically active population or those who will be in the labour force, thereby requiring more job opportunities in order to reap the benefits of the demographic dividend.

1.3 Data Sources

The analysis of demographic dividend period depends on the age structure transition of the population in future. Therefore, future population prospects need to be assessed by their age in order to derive the period of window of opportunity. Based on 2017 Population and Housing Census of Bhutan (PHCB) and the trends in fertility, mortality and migration, the population projections have been done until 2047, which becomes the base for analyzing the demographic dividend. Apart from the demographic analysis of population size, age structure and its growth rate and other parameters, the report also examines the current status of both employment and unemployment scenario in the country from the most recent labour force survey conducted in 2018. The future size of the working-age population combined with the labour force

¹ Bloom, D., D. Canning, and J. Sevilla. 2003. "The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change." Population Matters Series. Santa Monica, California: Rand.



participation rate and some assumptions related to it provide the estimated new entrants into the labour force in future, as well as the number of additional jobs that would be required to provide employment for the working-age population. Such estimations are done primarily to inform policy makers and planners so that necessary programmes and strategic actions plans are drawn to harness demographic dividend in the country.

1.4 Concepts and Definition

Demographic dividend: The demographic dividend is defined as a rise in the rate of economic growth due to a rising share of working-age persons in a population. This phenomenon occurs with a falling birth rate and the consequent shift in the age structure of the population towards the adult working-age. It is also commonly known as the demographic gift or bonus or demographic window of opportunity.

Dependency ratio: Dependency ratio is the ratio of the population of non-working ages, that is, young and old population (considered as dependents), to the population in working-age, usually expressed in percentage terms.

Working-age population: The working-age population in this report is considered as those between the ages of 15 – 64 years. It comprises of economically active population and economically inactive population. The starting point of this is conventionally taken at age 15,

however, in various countries, the upper age of defining working-age population vary and is taken as either 59 or 64 years. Conversely, it depends upon the age which is considered as 'old age' in a given country. In case of Bhutan, age 65 and above are considered as elderly age, hence the working-age population is taken as those in the age group of 15-64 years. The work participation rate in the age group 60-64 years as per the 2018 Labour Force Survey in Bhutan indicate fairly higher levels, and this can be reasonably justified.

Economically Active Population / Labour Force: All persons in the working-age population who were/are employed or unemployed during the reference period of the survey are referred to as Economically Active Population or Labour Force. Labour force represents the current supply of labour (15 – 64 years) available for the production of goods and services.

Economically Inactive Population: All persons who neither worked nor were seeking/available for work during the reference period is referred to as Economically Inactive Population. It includes people who are not part of the labour force or who fall outside labour force. In other words, economically inactive persons are neither employed nor unemployed.

Labour force participation rate: Labour force participation rate is the number of

economically active population per 100 working-age population. In other words, labour force participation rate informs that how many persons of the working-age population are economically active.

1.5 Organization of the report

The report presents the background information, its objectives, methodology and data sources in the study in the first section. This is followed by description of the future population prospects in terms of size and changing age structure of the population both at national and

sub-national levels in Bhutan up to 2047. The third section examines the demographic dividend period in future years, while the fourth section describes the analysis of the future growth of the working-age population. The labour force participation rate by age and sex as well as estimation of the future size of labour force are presented in the fifth section. This section also presents the number of additional jobs required in future if the demographic dividend is to be harnessed. Finally, the section 6 provides the conclusions and recommendations.

Chapter 2: Demographic Prospects at the National and Sub-national level

2.1 Population Prospects in Bhutan

The total population of Bhutan has increased to 735 thousand in 2017 from 634 thousand in 2005 and this is projected to increase further to 883 thousand by 2047. However, considering the rapidly declining trend in fertility and population growth, the population of the Bhutan is not expected to reach the one million mark. The natural rate of increase (NRI) was 3.1% in 1994, but it has declined to 0.88% in 2017 and it is further projected to decline to 0.27% by 2047. The rapid decline in fertility rate has been the main contributing factor to the decline in the population growth rate in Bhutan. The TFR of 6.5 in 1991 (National Health Survey, 1991) has declined to 1.7 per woman in 2017 (Population and Housing Census of Bhutan, 2017) which is below the replacement level of 2.1 per woman.

Figure 2.1 presents the projected population against the natural rate of increase. It indicates that, although the population size increases in absolute numbers, the NRI will decline over the coming years to as low as 0.27% by 2047. After 2047, it is most likely that we might see an equal number of deaths and births or even more deaths than births due to higher proportion of older population. As a result, Bhutan may not see any growth in its population after 2047. It is this changing population structure that is emerging as an issue of critical importance.

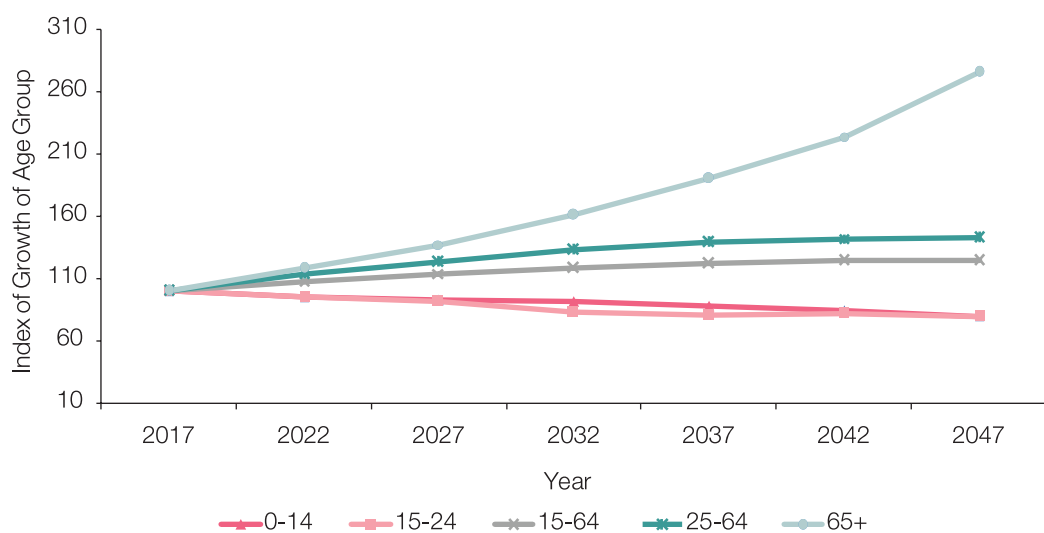
2.2 Age Structure Transition

As a result of sharp decline in fertility, the growth of different segment of population differs drastically (Figure 2.2). The proportion of children is declining steadily from 26% in 2017 to 19% by 2047, whereas

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Figure 2.1 Projected Population by Sex and Rate of Natural Increase, Bhutan, 2017-2047

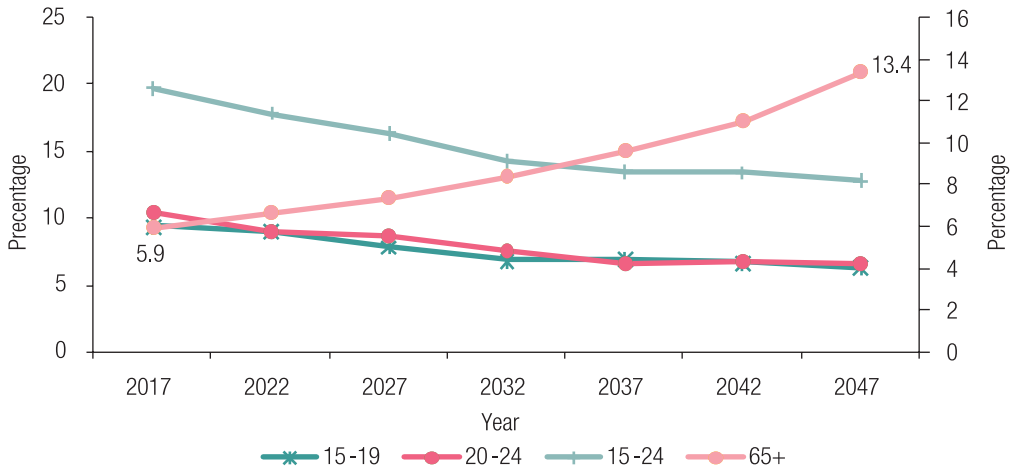
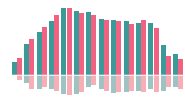


Source: Population Projections Bhutan 2017-2047, National Statistics Bureau

Figure 2.2 Index of Growth by Broad Age group, Bhutan, 2017-2047

the proportion in the working-age(15-64) is increasing from 68% in 2017 to 70.8% in 2037 and slowly declining to 69.5% by 2047. At the same time, the proportion aged 65+

is increasing very rapidly from 5.9% in 2017 to 13.4% in 2047. This change in the age composition of the population opens up the opportunity of demographic dividend.



Source: Population Projections Bhutan 2017-2047, National Statistics Bureau

Figure 2.3 Percentage of Projected Population by young and elderly Age group, Bhutan, 2017-2047

The Figure 2.3 compares the proportion of different young age population group against the proportion of elderly population. It clearly indicates that the proportion of young age population decreases as compared to the proportion of elderly population.

Over the past 12 years, Bhutan has seen an increase in the proportion of urban population from 30.9% in 2005 to 37.8% in 2017. The proportion of urban population is further projected to increase to a little more than half (56.8% or 501 thousand persons) of the entire population residing in the urban areas by 2047.

2.3 Population Prospects at Sub-National Level

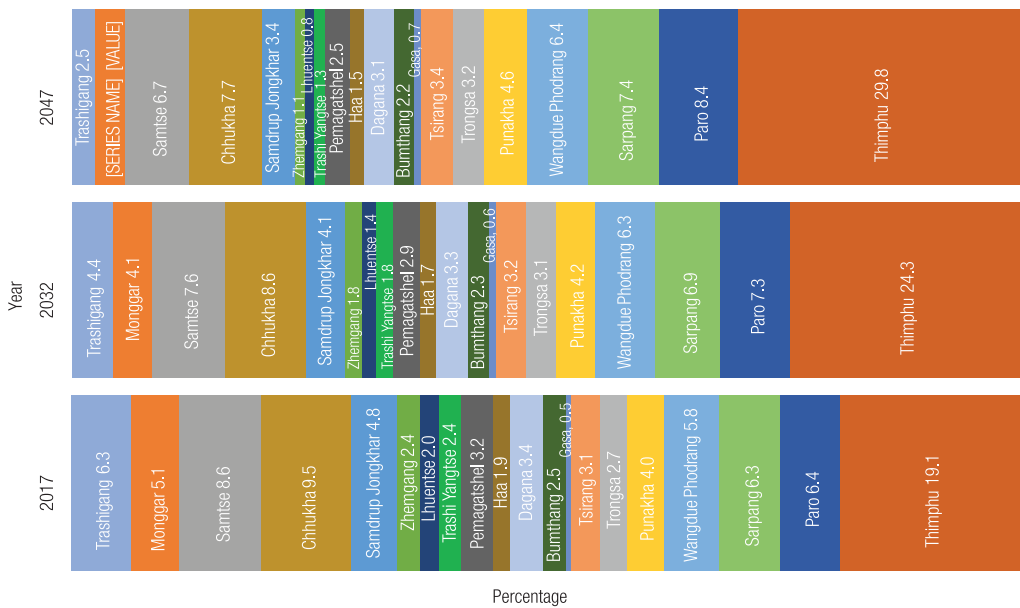
Comparing the population distribution by region, the western region is more

populated compared to the eastern and the central regions. The population in the western region has slightly increased to 53% in 2017 from 48% in 2005. This is projected to increase further to 62% by 2047. While there has been an increase in the population size in most of the western Dzongkhags between 2005 and 2017, it was observed that a great number of Dzongkhags in the east has experienced a decline. Thimphu has the highest increase in terms of absolute number, while Punakha and Trongsa has the highest rate of change in its population size between the two census periods.

In 2005, the population of Thimphu was 98 thousand persons, accounting for 16% of the total population of Bhutan. This has increased to 138 thousand or about 19% in 2017. It is projected that the population

HARNESSING DEMOGRAPHIC DIVIDEND IN BHUTAN

of Thimphu will increase further to 263 thousand by 2047 accounting for almost 30% of the total population in the country (Figure 2.4).



Source: Population Projections Bhutan 2017-2047, National Statistics Bureau

Figure 2.4 Percentage Share of the total projected population by Dzongkhag, 2017, 2032 and 2047

Chapter 3: Demographic Dividend in Bhutan

3.1 Demographic Transition

Almost all the countries undergo a 'demographic transition' which characterizes changes in fertility and mortality rates over a period of time. This results into changes in growth rate as well as in the age-structure of the population. Typically, there are three phases of demographic transition. In the first phase, mortality starts declining but fertility remains at very high level, due to which share of younger age group remains very high, creating a high dependency ratio. In the second phase, the fertility starts declining at a faster pace, leading to reduction in the size and share of younger age population. However, because of high fertility rates in the past, the population continue to grow and these high fertility cohorts enter into the working-age population. With the increasing share of working-age

population, there is a considerable reduction in dependency ratio. In the third phase of the demographic transition, both fertility and mortality remain low resulting into slower population growth. This slow rate of population growth combined with the increasing share of elderly population leads to increasing dependency ratio in the country.

Bhutan has undergone a classical demographic transition as is evident from Figure 3.1. The crude birth rate of 39 births per thousand population was quite high in 1984, but it started declining after 2000 and came down to a level of 15.5 births per thousand population in 2017. During the same period, the crude death rate, which was 13.4 deaths per thousand population started declining steadily even before the onset of fertility decline. As of 2017, the crude death rate stands at 6.7 deaths per thousand population.

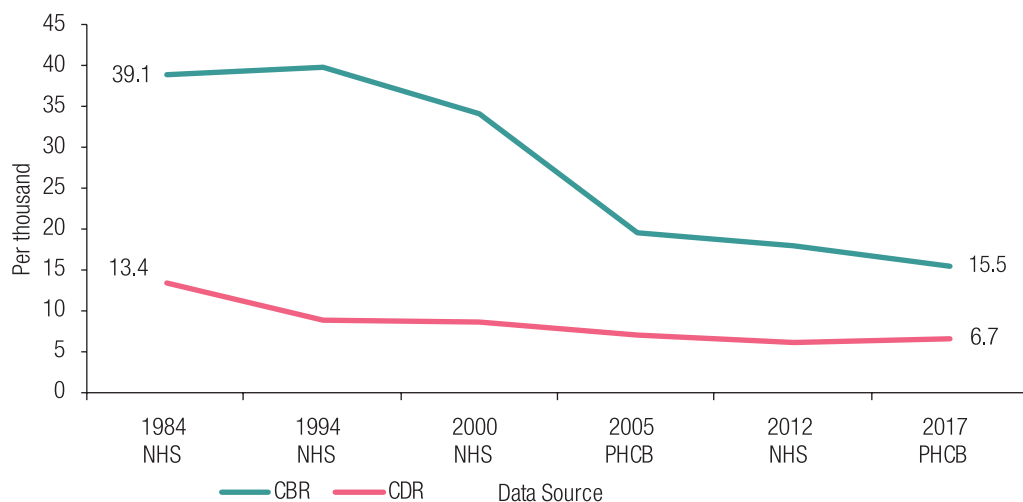


Figure 3.1 Trends in Crude Birth and Death Rates, Bhutan 1984-2017

One of the striking features of the demographic transition in Bhutan is the rapid decline in fertility rates in a short period of time. As can be seen from Figure 3.2, the Total Fertility Rate (TFR) has come down from a high of 6.4 children per woman in 1982, to 1.9 in 2017, which is below the replacement level of 2.1 births per woman. The TFR as estimated from the the 2017 Population and Housing Census of Bhutan (PHCB) using the conventional method is 1.7. The P/F ratio method and reverse survival method yielded 2.4 and 1.93 births per woman respectively. Thus, the average of numerous estimates (1.9) was considered in the report².

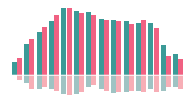
The demographic dividend is the effect of an increase in the share of working-age population on the economic growth. It is

commonly measured by the dependency ratio, purely based on number of children (those aged 0-14), working-age population (those aged 15-64) and the elderly (those aged 65+).

In general, a lower dependency ratio is desirable but as the share of elderly population increases over a period of time, the dependency ratio cannot remain low for a long time. Thus, the dependency ratio falls and rises again. The time when there is low dependency ratio is the period of demographic dividend (window of opportunity).

This window of opportunity is expected to be a short phase in any population depending upon the pace of fertility decline. If the fertility decline is slow and steady as occurred in the western countries, this phase may even pass unnoticed, but in case of Bhutan, which

² National Statistical Bureau of Bhutan, 2019, 'Population Projections Bhutan 2017 – 2047, Thimpu, Bhutan



Source: Population Projections Bhutan 2017-2047, National Statistics Bureau

Figure 3.2 Trends in Total Fertility Rate(TFR) in Bhutan

experienced a rapid decline in fertility, the age structure transition is quite evident and is expected to be present for about next 40 years. Demographers have argued that the savings made during this period are invested and this yields the second dividend, which is primarily the economic. However, in this report, the primary focus is on the first dividend which is purely the demographic. The conventional working-age group of 15 - 64 years has been used to define dependency ratios in the report.

3.2 Methodology

An important question is to decide on how low should the dependency ratios be to gain the demographic dividend. This has been studied by examining how much the

ratio would be in a stationary population and a ratio lower than this ratio would be considered to be more advantageous than normal (or stationary) and hence a 'dividend'. The examination of the stationary age distributions in model life tables (four Coale-Demeny model tables and five U.N. model tables for males and females) show that the share of working-age population is rather low at low life expectancies, rises as life expectancy increases and remains steady through moderate to high expectancies and falls at very high expectancies. The share of the 15-64 age group hovers around 66-67% in the middle and high life expectancy range and then declines at very high life expectancy. Therefore, a share greater than 67% may be considered to be advantageous as it is equivalent to the dependency ratio of below

one-half ($33/67$ equals approximately one half). This is the time when the demographic dividend may accrue (Kulkarni, 2017³).

If the working-age is considered between 15-59 years, share of this age group to the total population hovers around 60% in the middle and high life expectancy scenario and then it declines in the very high expectancy scenario. Therefore, the share greater than 60% may be considered to be advantageous as it is equivalent to the dependency ratio of 40/60 or two-thirds and hence when the dependency ratio is less than two-thirds, the dividend will accrue.

In case, if working-age population is considered between 20-64, the share of the 20-64 age range hovers around 57% in the moderate to high life expectancies and hence there is demographic dividend as the share of this age group is above 57% or the dependency ratio is below three-fourths ($43/57$).

For the analysis of demographic dividend phases in Bhutan, working-age of 15-64 years is considered. However, results based on alternate scenarios, with the 15-59 age group as working-age, is also presented in Annex II. The choice of working-age differs in different countries and usually either 15 – 59 years or 15 – 64 years are taken as working-age population. The recently conducted 2018 Labour Force Survey⁴

considered 15 years as the lower age limit for defining someone as economically active population. Moreover, the labour force participation rate analyzed by age reveal that those in the age group 60- 64 are still economically active and thereafter, the LFPR decreases. Hence taking 15-64 as working-age population in Bhutan is reasonably justified.

3.3 Trends in Dependency Ratios in Bhutan

The results of the population projections in Bhutan for the period 2017 to 2047 clearly indicates that the age-sex structure of the total population will undergo a notable change. The projected age-sex distribution by broad age group reveals that the share of the young population, below 15 years of age, will fall from 26% to 17% and that of elderly population, aged 65 and over will increase from 6% to 13% between 2017 and 2047 (Table 3.1 and Figure 3.3). Similarly, the size of the young population will decline from about 189 thousand to 151 thousand during the same period. The share of the working-age population (15-64 years) will increase to over 70% and the dependency ratio will fall to about 40% during 2027-42. Therefore, this provides a huge demographic dividend. The window of demographic opportunity will begin to close soon after that, as the share of the working-age population will decline. The share of elderly will continue to increase and is projected to cross 100 thousand by 2043.

3 Kulkarni P M, 2017, 'An Assessment of Demographic Dividend in India and its Large States', A report submitted to the United Nations Population Fund (UNFPA), India

4 National Statistical Bureau of Bhutan, 2018, 'Labour Force Survey Report of Bhutan', Thimpu, Bhutan

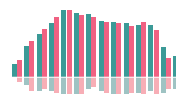
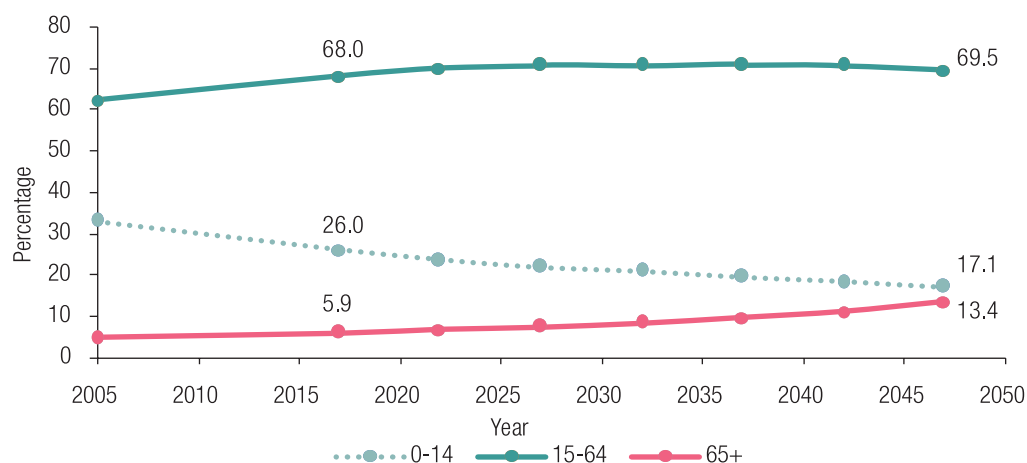


Table 3.1 Projected Population by broad age group and dependency ratios in Bhutan, 2017-2047

Numbers	2017	2022	2027	2032	2037	2042	2047
0-14	189,417	179,313	174,534	173,333	166,521	158,287	151,175
15-64	494,664	533,221	563,800	584,343	602,673	615,287	614,041
65+	43,064	50,715	58,930	69,281	81,982	96,326	118,650
Percentage							
0-14	26.0	23.5	21.9	21.0	19.6	18.2	17.1
15-64	68.0	69.9	70.7	70.7	70.8	70.7	69.5
65+	5.9	6.6	7.4	8.4	9.6	11.1	13.4
Dependency Ratio							
Young (0-14)	38.3	33.6	31.0	29.7	27.6	25.7	24.6
Old (65+)	8.7	9.5	10.5	11.9	13.6	15.7	19.3
Total (Young and Old)	47.0	43.1	41.4	41.5	41.2	41.4	43.9

Source: Population Projections Bhutan 2017-2047, National Statistics Bureau



Source: Population Projections Bhutan 2017-2047, National Statistics Bureau

Figure 3.3 Projected Trends in Broad Age Distribution (Percentage), Bhutan 2017-2047

The population projection reveal that the share of the working-age population will increase, which is beneficial for economic growth and this can be termed as the potential demographic dividend. Figure 3.4 presents the ratio of the working-age to the non-working-age population (dependents) in Bhutan. It is evident that the ratio increases from 1.65 (which means that for every one

dependent, there are 1.65 working-age persons) to 2.4 during the coming two to three decades. However, by 2047, this ratio will start to decline due to increase in the dependent population (mainly elderly population) in the country.

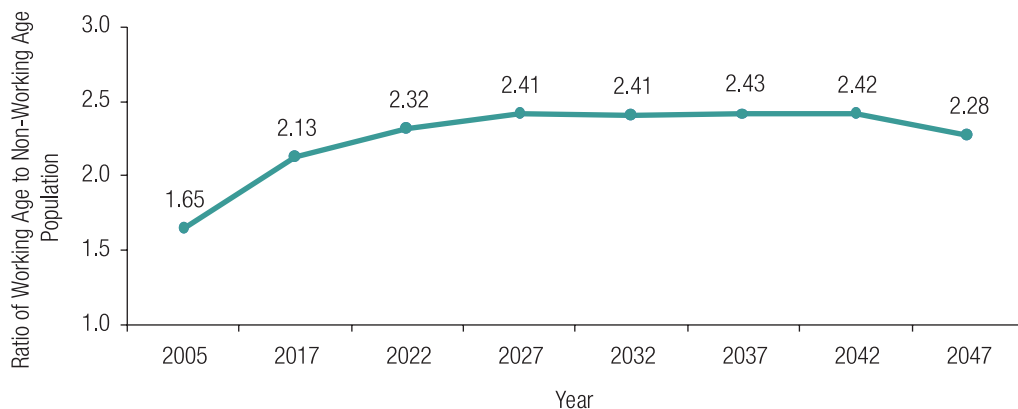


Figure 3.4 Ratio of Working-age to Non-Working Age Population in Bhutan, 2005-2047

3.4 Demographic Dividend at National and Sub-National Levels

In Bhutan both mortality and fertility have declined and large cohorts are entering the adolescent and young adult years, offering opportunities for a demographic dividend. With investment in the empowerment of adolescents and young population, including sexual and reproductive health and reproductive rights, and quality education has a lifelong effect. This results in high proportion of the population with better health and more education moving into its most productive years and if these young people are met with society and an economy that offer real opportunities for decent work, demographic dividend can be harnessed⁵.

The period of demographic dividend or window of opportunity can be assessed

by the trends in dependency ratio over a period. Saad (2009⁶) has identified three stages of demographic dividend. Considering the working-age population as 15-64, the first phase of dividend is where dependency ratio remains above one-half and starts declining. During this phase, the population is yet to start deriving the dividend, but gradually moving towards it. The second phase occurs when the dependency ratio is below one-half and declining, which indicates that the dividend is available and increasing (dependency ratio declining) and one may call that the window of opportunity has opened. The third and the final phase is when the dependency ratio is still below one-half but gradually increasing, yet the dividend is still being derived. However, since the dependency ratio has started increasing, the window of opportunity would eventually close.

⁵ United Nations Population Fund (UNFPA), 2015, 'UNFPA: a value proposition for the demographic dividend' (<https://esaro.unfpa.org/sites/default/files/pub-pdf/UNFPA%20-%20Demographic%20Dividend%20Value%20Proposition.pdf>)

⁶ Saad, Paulo M., 2009. "Demographic Trends in Latin America and the Caribbean", paper prepared for the Workshop on Demographic Change and Social Policy organized by the World Bank at Washington, D.C. July 14-15, 2009.

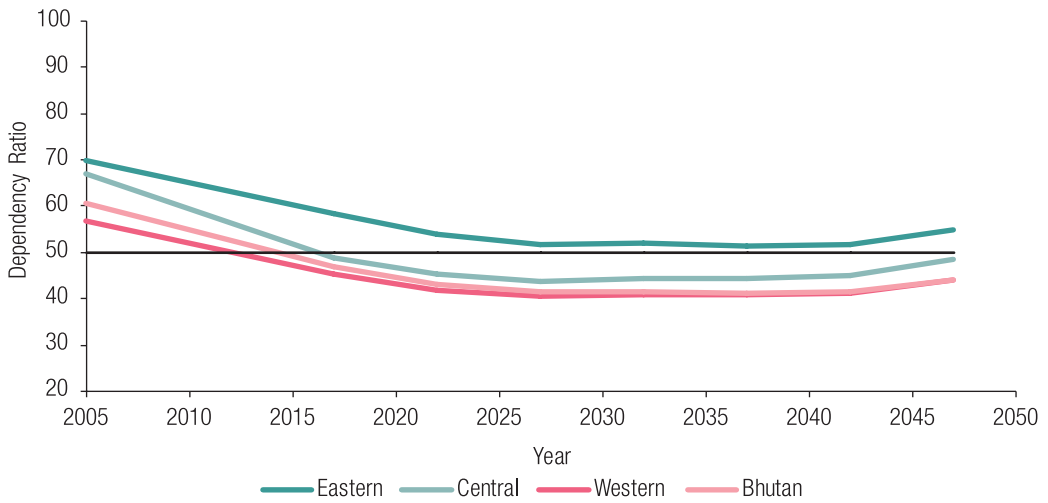
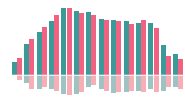


Figure 3.5 Projected trends in dependency ratio (15-64 as working-ages) by Region, Bhutan, 2005 - 2047

Once the dependency ratio goes beyond the critical level, the third phase comes to an end and one could say that the window is closed.

The trends in projected dependency ratios for Bhutan as well as for the Dzongkhag and Regional level are presented (Table 3.2). For Bhutan, the dependency ratio was quite high with 61% in 2005 but it fell to 47% by 2017. Looking at the dependency ratio trends, Bhutan has already started deriving the demographic dividend even before 2017. This dependency ratio is projected to fall further to 41% by 2027 and thereafter remain around that level for about next 15 years. However, after 2042, the dependency ratio would increase and reach 44% by 2047, as a result the dividend would not be large. Moreover, since the ratio would rise above the critical 50% point, and the dividend would no longer be available (Figure 3.5).

A considerable variations in the projected dependency ratios by Dzongkhag has been noticed. An attempt has been made to estimate the dependency ratio by three distinct geographical regions (east, central and west). The findings suggest that the dependency ratios was highest in eastern region at 70% in 2005. However, it is projected to decline to 52% by 2032 but still remain higher than the critical point (50%) before it starts rising again. Similarly, the central region also had a very high dependency ratio of 67% in 2005, but declined to 49% in 2017 (below the critical point) and entered into a period of demographic dividend. This dependency ratio will fall further to 44% by 2027 and thereafter remain around that level before it starts rising again by 2042. Even by 2047, the dependency ratio will remain below the critical point and the region will continue to derive demographic dividend.

Table 3.2 Projected trends in dependency ratio (15-64 as working-ages), Bhutan by Region and Dzongkhag, up to 2047

Country / Region / Dzongkhag	2005	2017	2022	2027	2032	2037	2042	2047
BHUTAN	60.6	47.0	43.1	41.4	41.5	41.2	41.4	43.9
Trashi Yangtse	71.6	64.9	59.5	57.0	56.8	55.9	55.6	58.9
Trashigang	68.2	54.1	50.4	48.8	49.1	48.9	49.1	52.7
Samdrup Jongkhar	66.6	51.9	47.9	46.0	46.2	45.8	45.9	49.0
Pema Gatshel	71.9	59.7	55.7	54.1	54.7	54.8	55.7	60.4
Monggar	68.2	60.9	55.7	53.4	53.3	52.6	52.4	55.4
Lhuentse	73.0	59.1	54.2	51.9	51.9	51.2	51.0	54.0
Eastern Region	69.9	58.4	53.9	51.9	52.0	51.5	51.6	55.1
Bumthang	58.8	53.0	49.2	47.9	48.6	48.9	49.7	53.4
Zhemgang	72.2	60.9	56.5	54.7	55.5	55.4	56.3	60.7
Trongsa	69.5	35.6	33.4	33.0	34.0	34.9	36.0	39.2
Sarpang	61.2	43.1	39.8	38.4	38.7	38.7	39.1	41.9
Wangdue Phodrang	65.6	45.0	41.4	40.1	40.5	40.7	41.4	44.6
Tsirang	65.3	52.0	47.9	46.0	46.1	46.0	46.4	50.1
Dagana	76.6	53.5	49.0	46.8	47.0	46.4	46.6	49.9
Central Region	67.0	49.0	45.3	43.9	44.4	44.4	45.1	48.5
Gasa	61.7	50.0	46.1	44.5	45.0	44.9	45.0	47.8
Punakha	62.7	47.1	44.0	42.9	43.7	43.9	44.4	47.7
Chhukha	49.7	40.9	37.7	36.2	36.5	36.3	36.4	38.6
Thimphu	49.5	38.0	35.4	34.5	35.1	35.4	35.9	38.2
Paro	53.8	44.1	41.4	40.5	41.3	41.6	42.3	45.6
Haa	57.9	46.9	43.3	41.8	42.5	42.6	43.2	46.5
Samtse	63.0	49.5	45.2	42.9	42.6	42.0	41.8	44.3
Western Region	56.9	45.2	41.9	40.5	40.9	40.9	41.3	44.1

The demographic dividend period in Bhutan has started sometimes around 2015 and will continue to have this until 2047 and beyond. The higher dependency ratios in eastern region is explained by a recent study on rural-urban migration and urbanization in Bhutan based on 2017 PHCB data which indicate that internal migration is taking place from eastern to central and particularly to the western

region (NSB, 2019). On the other hand, due to working-age population moving to western and central regions, the period of having demographic dividend has already started in these two regions and will continue to have till 2047 and beyond, while the eastern region may never experience the demographic dividend.

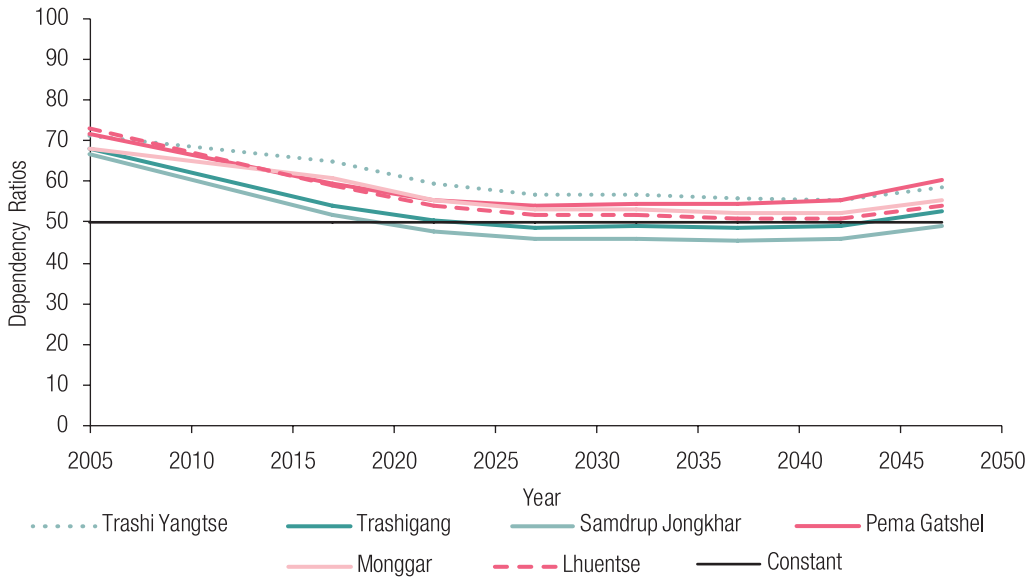
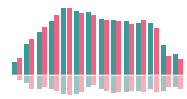


Figure 3.6 Projected trends in dependency ratio (15-64 as working-age), in Eastern Region, Bhutan, 2005 - 2047



Figure 3.7 Projected trends in dependency ratio (15-64 as working-age), in Central Region, Bhutan, 2005 - 2047

3.5 Demographic Dividend at Dzongkhag Level

The dependency ratio in most of the Dzongkhags in eastern region except for Samdrup Jongkhar will not fall much below the critical points of 50% in coming three decades (Table 3.2 and Figures 3.6 to 3.8). Infact, the dependency ratio will start to increase indicating the close of the demographic window of opportunity.

For the Dzongkhags in central region, Trongsa, Sarpang and Wandgue Phodrang have already started accruing demographic dividend by 2015 and will continue to have this opportunity during the projection period. Bumthang and Dagana, will experience the demographic dividend phase by 2020. However, for these two Dzongkhags, the demographic dividend will close by 2047. Similar to the phenomenon in eastern region, Zhemgang Dzongkhag

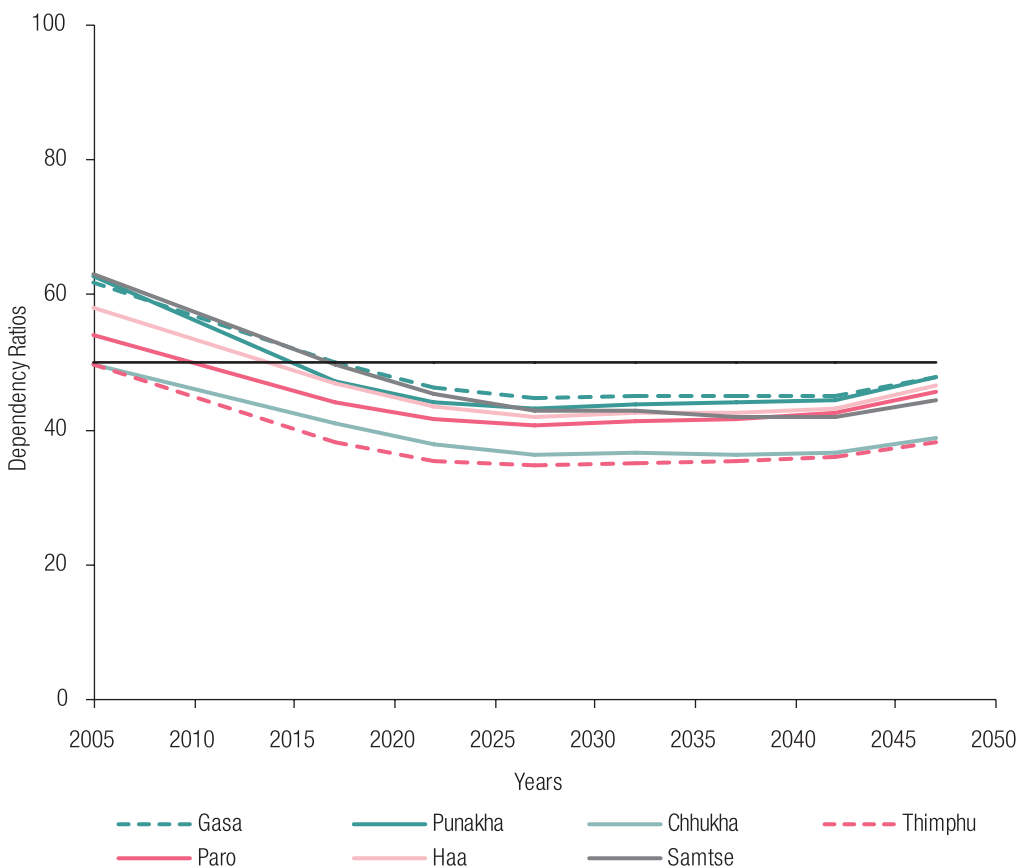
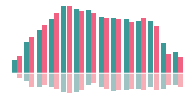


Figure 3.8 Projected trends in dependency ratio (15-64 as working-age), in Western Region, Bhutan, 2005 - 2047



may never experience the demographic dividend period as the dependency ratio would not fall below the critical 50% point, instead the dependency ratio will start increasing by 2042 (Figure 3.7).

Figure 3.8 presents the demographic dividend period for the Dzongkhags in the western region. As can be seen, most of the Dzongkhags in this region have started experiencing the demographic

dividend period with the dependency ratios below 50% and will remain open till 2047. The reason for wide opening of the demographic dividend period is mainly the migration of the working-age population from east and central regions. This results in higher proportion of working-age population in western region and therefore the lower dependency ratio .

Chapter 4: Dynamics of Working-Age Population in Bhutan

4.1 Size and Growth Rate of Working Population

The analysis of the population projections by age provides the future trends of the size of working population in Bhutan. The number and the growth rate of the total and working-age population between 2005-2047 (Figure 4.1) reveals that the size of the working-age population will peak at 615 thousand by 2042 and start declining thereafter due to large number of people moving into old age category. As a result, the annual growth rate of working-age population will be higher than that of the total population until it coincides with each other in 2032. While the overall population will continue to grow due to the population momentum, the growth rate of the working-age population after 2042 will start declining due to ageing.

4.2 Working-age population prospects

Most of the discussion on demographic dividend revolves around the share of the working-age population. While this provides the essence of the dividend, the size of working population plays a central role when labour migration is the issue. In Bhutan, most of the working-age population from the east are migrating to the west causing labour shortage in the east.

In 2017, there were 395 thousand persons aged 15-64 years, and this is projected to increase further to 615.3 thousand by the year 2042. This the highest number of working-age population observed during projection period (Figure 4.2). It will reduce slightly and reach around 614 thousand by 2047.



Figure 4.1 Projected Size and Annual Growth Rates of Total and Working-age Population, Bhutan, 2005 - 2047

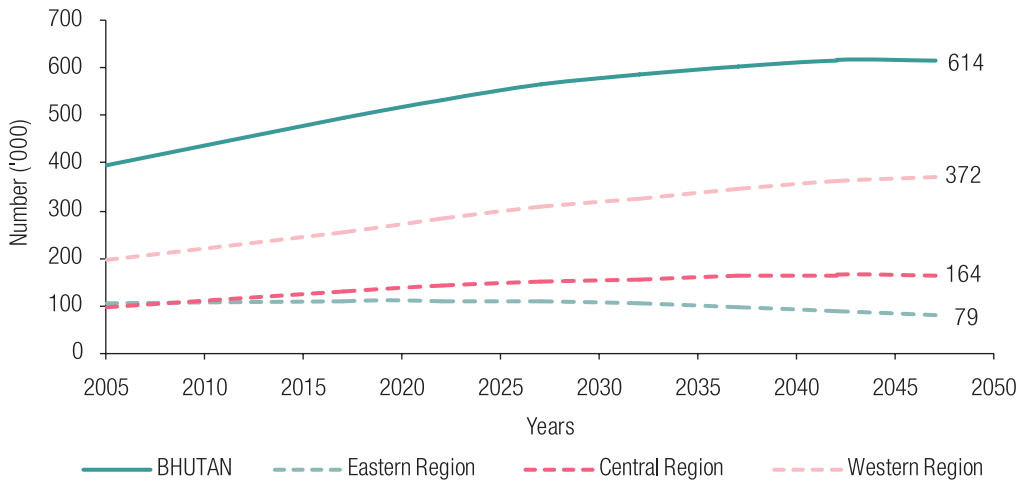


Figure 4.2 Projected size of working-age population (15-64 years), Bhutan by Region, 2005 - 2047

The distribution of working-age population by the three regions of the country and its changes over time depicts an interesting feature. In 2005, the western region

accounted for almost half of the total working-age population (49.7%), and this is projected to increase further to 60% by 2047 and continue to account for

Table 4.1 Percentage share of working-age population by region in Bhutan, 2005 - 2047

Country / Region	2005	2017	2022	2027	2032	2037	2042	2047
Eastern Region	26.2	22.3	20.6	19.1	17.6	16.0	14.4	12.8
Central Region	24.1	26.2	26.6	26.7	26.7	26.7	26.7	26.6
Western Region	49.7	51.5	52.7	54.2	55.8	57.3	58.9	60.6

more than 50% of working-age population (Table 4.1 Figure 4.3). On the contrary, the share of the working-age population in eastern and central region were 26.2% and 24.1% respectively in 2005. This is projected to decline further to 12.8% in the east, while the central region would experience a slight increase in its working-age population share (26.8%) by 2047. The study on migration in Bhutan has shown that the Dzongkhags in these region have experienced out-migration of those people in the working-age group. As a result, the share of working-age population in the sending region has started to decline, while it continues to grow in the receiving region. Such trend provides insights to the policy makers and planners to take cognizance of the fact that people are

moving from one region to another causing rural de-population and urban congestion. Moreover, this also provides an opportunity for the planners to plan strategically and maintain a balance of the working-age population across regions of the country.

In order to observe how the size of working-age population changes over time by Dzongkhag, an analysis on the trends on population size is shown (Table 4.2). A forward-looking policies and development strategies must include future population dynamics and build on intersecting contours of age and location.

The increase in the share of working-age population is only an opportunity, while the actual benefit depends on how

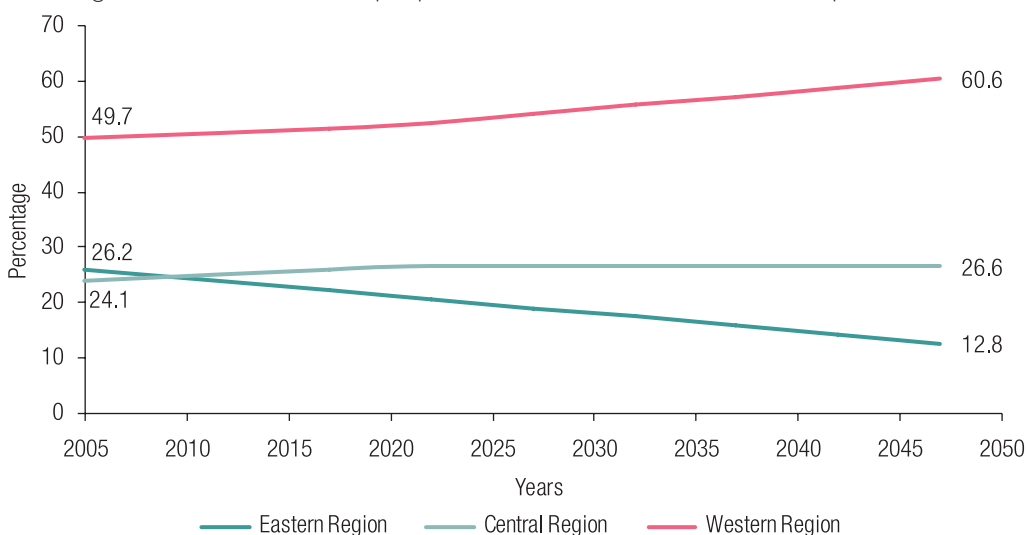
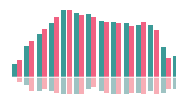


Figure 4.3 Projected share of working-age population (15-64 years) in Bhutan by Region, 2005 - 2047

**Table 4.2** Projected trends in population (in thousands) in ages 15-64 in Bhutan by Dzhongkhag

Country / Region / Dzhongkhag	2005	2017	2022	2027	2032	2037	2042	2047
BHUTAN	395	495	533	564	584	603	615	614
Trashigang	10	10	10	10	10	9	8	7
Samdrup Jongkhar	30	30	28	27	24	21	18	14
Pema Gatsel	24	23	24	24	23	23	22	20
Monggar	8	15	15	16	15	15	15	14
Lhuentse	22	23	23	23	22	21	20	18
Eastern Region	9	9	9	8	8	7	6	5
Bumthang	104	110	110	108	103	96	89	79
Zhemgang	10	12	12	13	13	13	13	13
Trongsa	11	11	11	10	10	9	8	6
Sarpang	8	15	17	18	19	20	20	21
Wangdue Phodrang	26	32	35	38	41	43	45	46
Tsirang	19	29	33	35	37	38	39	39
Dagana	11	15	16	17	18	19	20	20
Central Region	10	16	17	18	18	19	19	19
Gasa	95	130	142	150	156	161	164	164
Punakha	2	3	3	3	3	4	4	4
Chhukha	11	20	21	23	24	26	27	27
Thimphu	50	49	51	52	52	52	51	49
Paro	66	101	117	134	149	164	179	190
Haa	24	32	36	40	43	46	49	51
Samtse	7	9	10	10	10	10	10	9
Western Region	37	42	43	44	44	44	43	41
	196	255	281	306	326	345	362	372

efficiently this is being tapped on. In other words, just because there is an increasing number of persons of working-age, this does not necessarily mean that there will be more output or improved productivity, or that there will be greater income and opportunities to improve well-being. There is no doubt that physical capital matters, but the existence of high-quality infrastructure, combined with the investment in the human capital in particular is critical to facilitating and sustaining greater economic output and growth. A fast growing labour force that is well-educated and fully physically and

cognitively developed is therefore better positioned to contribute to increased economic output and take advantage of broader opportunities presented by the demographic transition (Lutz et al. 2019). The potential gains in economic output and improved well-being depends on the productive capacity of each new person that enters the labour force.

Chapter 5: Implications on Future Employment

In order to prepare and meet the requirements of the additional labour force in future, proper planning is critical and essential. Information on the labour force is collected through series of Labour Force Surveys as well as from other household surveys and censuses. In all these censuses and surveys, the working-age population has been defined as those persons aged 15 years and above. A person who have worked as paid employee, own account worker and contributed to family work were considered employed. This also included persons with a job but not at work during the reference period. Unemployed on the other hand are those persons who were seeking work in the last four

weeks prior to the interview and were available for work in the next two weeks. The total of both employed and unemployed working-age population is considered as the labour force, and the Labour Force Participation Rate (LFPR) is the proportion of labour force to the total working-age population.

5.1 Labour Force Participation Rate

The LFPR in Bhutan has decreased by 6 percentage points between 2010 and 2018 from 68.6% to 62.6%. However, there was an increase (65%) again in 2017. Similarly, the unemployment rate has also experienced both decrease and increase over time. It declined from 3.3% in 2010 to 2.1% in 2016 but increased to 3.4% in 2018. Unlike the LFPR and

Table 5.1 Labour force participation rate, Unemployment rate and Youth unemployment rate, Bhutan, 2010 - 2018

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018
LFPR	68.6	67.4	64.4	65.3	62.6	63.1	62.2	65.7	62.6
Unemployment rate	3.3	3.1	2.1	2.9	2.6	2.5	2.1	3.1	3.4
Youth Unemployment Rate	9.2	9.2	7.3	9.6	9.4	10.7	13.2	12.3	15.7

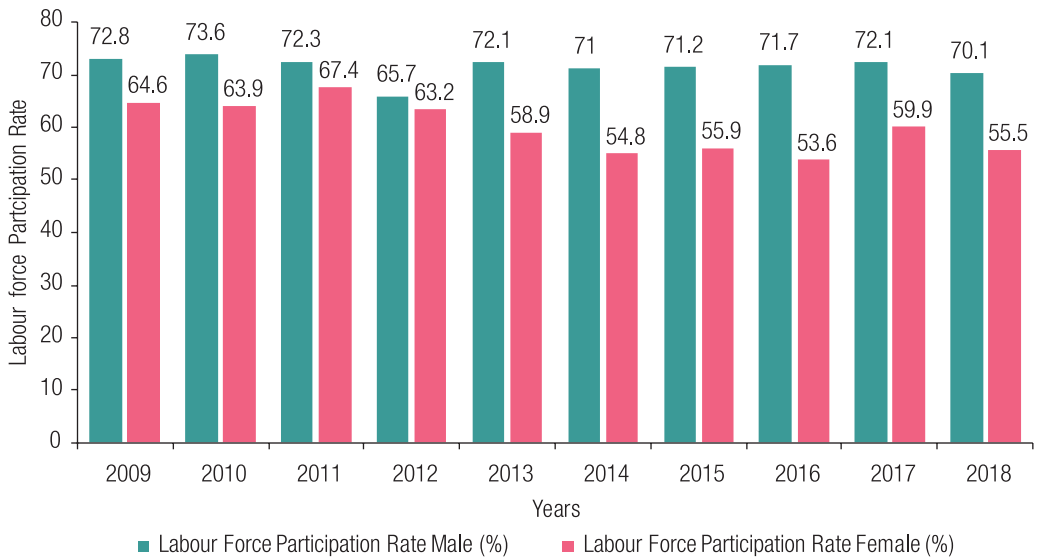


Figure 5.1 Labour force participation rate by sex, Bhutan, 2018

overall unemployment rate, the youth unemployment rate has been steadily on the rise over the past few years-from 9.2% in 2010 to 15.7% in 2018 (Figure 5.2).

By sex, the labour force participation rate in 2018 is higher for males (70%) as compared to their female (56%) counterpart. In the past nine years, there has not been much change in the male labour force participation rate, while the female labour force participation rate has declined from 65% in 2009 to 56% in 2018. Similarly, the unemployment rate is also higher for the female population as compared to the males. The unemployment for female has improved from 5.3% in 2009 to 4.2% in 2018 while male unemployment rate experienced a slight change from 2.6% in 2009 to 2.7% during the same period.

Among the Dzongkhags, Gasa (70.2%) and Samtse (70.7%) has the highest LFPR in 2018 while Zhemgang (53.9%) and Sarpang (50.2%) has the least. Thimphu (58%) and Chhukha (63%) are also at the lower end. On the other hand, Pema Gatshel has the highest proportion of employed persons with 100%. This is closely followed by rest of the Dzongkhags except for Thimphu and Paro which has the least proportion employed with 90% and 92% respectively. There is not much disparity between sexes in the proportion employed across Dzongkhags except for Thimphu, where the proportion of female employed is 84%, which is 10 percentage point lower compared to their male counterparts.

A little more the half (54%) of the employed population were in the agricultural

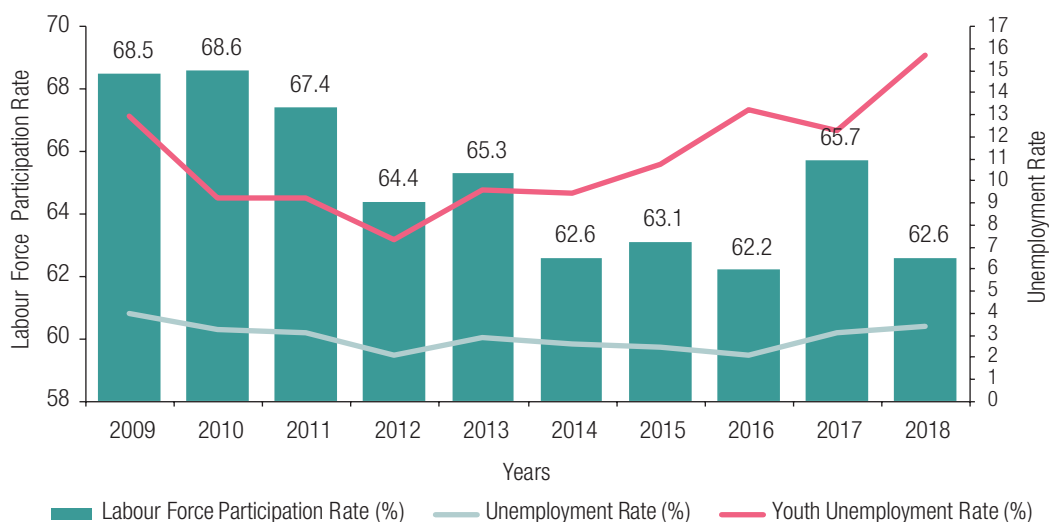


Figure 5.2 Labour force participation rate, Unemployment rate and Youth unemployment rate, 2009-2018

Table 5.2 Proportion of Employed Persons by Sector, Area and Sex, Bhutan, 2018

Sector	Total	Area		Sex		Total
		Urban	Rural	Male	Female	
Agriculture	162,239	4.4	74.0	46.4	63.2	54.0
Industry	34,542	19.0	8.5	13.3	9.3	11.5
Service	103,660	76.6	17.5	40.3	27.4	34.5
All sectors	300,442	100.0	100.0	100.0	100.0	100.0

sector in 2018, while the service sector and industry sector employed 35% and industry 12% respectively. By sex, there were more females (63%) employed in the agricultural sector than males (46%). On the contrary, higher proportion of male population are employed in the industry and service sectors as compared to females (Table 5.2).

5.2 Method of Estimation

To compute the required labour force in future, a simple and straight forward method is applied with the use of LFPR

and the population projection. The size of the labour force is estimated by age and sex by applying the age specific LFPR to the number of working-age population projected in the age and sex groups for future years.

The official population projection at the national and the Dzongkhag level published by NSB is used for the projection of the labour force. The population projection is based on 2017 PHCB.

Both LFS and PHCB considered persons aged 15 years and above as working-age

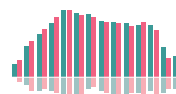


Table 5.3 Labor Force Participation Rate by sex, Bhutan, 2018

Bhutan	Male	Female	Total
Labour Force Participation Rate (15-64)	73.3	58.6	65.7
Labour Force Participation Rate (15-60)	73.0	58.4	65.5
Employed To Population Ratio (15-64)	71.1	71.1	63.4
Employed To Population Ratio (15-60)	70.8	55.7	63.0

population and all indicator on LFPR and unemployment are based on this age group. However, in the analysis of demographic dividend, dependency ratios are computed based on the working-age group of 15-64 years and elderly population as 65 years and older. The estimation of the labour force for the report was based on the age group of 15-64 years. To project the future labour force, the LFPR of 2018 by sex was assumed to remain constant for the projection period (till 2047). The LFPR is used with the population projection to arrive at the number of labour force in the future time period. At the Dzongkhag level the estimate was computed with the use of the respective LFPR by sex, however, the age group was adjusted to ensure that it totals to the national level. The labour force participation rate for the ages 15-64 in 2018 is indicated in the Table 5.3 and 5.4.

It is worth noting that the LFPR has never fallen below 62% and therefore, the LFPR of 62.6% is one of the lowest rates observed thus far. Therefore, it is safe to assume that the number of jobs required in the future would be the number that is projected using the LFPR in 2018.

Table 5.4 Age specific Labour Force Participation Rate by Sex, Bhutan, 2018

	Labour force participation rate %		
	Male	Female	Total
15-19	8.3	6.1	7.2
20-24	49.7	46.9	48.3
25-29	85.3	68.6	76.2
30-34	92.0	72.0	81.6
35-39	94.3	73.4	83.5
40-44	95.6	75.9	85.9
45-49	93.9	74.6	83.7
50-54	91.1	69.7	79.9
55-59	86.1	68.6	77.6
60-64	76.8	62.2	69.6
Total	73.3	58.6	65.7

5.3 Projected Number of Additional Jobs Requirements

The total labour force in the country is projected to grow between 2019 and 2042 from 341 thousand to 435 thousand and then decrease to 434 thousand by 2047. Looking at the trend, it is most likely that the total labour force would decrease further after 2047. Considering an ideal zero-unemployment scenario where everybody in the labour force is employed; Bhutan will need to create 13 thousand additional jobs in 2019. Similarly, in the next three years, there will be an addition of about 20 thousand people entering into the labour force which comes around 32 thousand jobs between 2019 to 2022 or roughly about 8 thousand job per year.

HARNESSING DEMOGRAPHIC DIVIDEND IN BHUTAN

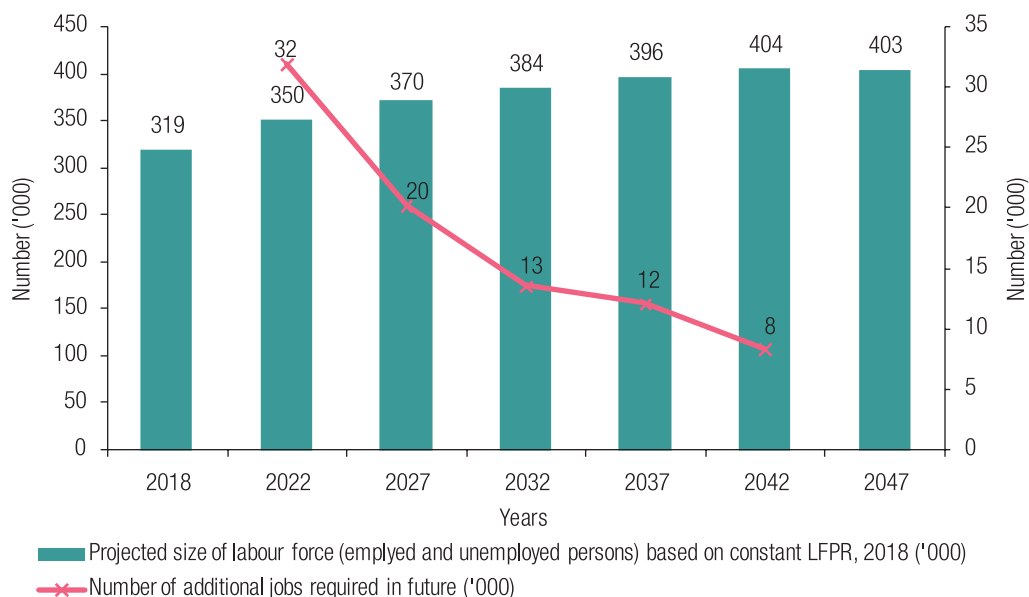


Figure 5.3 Projected Trends in Number of Economically Active Population and Projected Number of Additional Jobs Required, 2018-2047

As the window of opportunity to harness the demographic dividend opens up, the number of additional jobs required would increase to 30 thousand by 2027. This means that additional of 30 thousand jobs will need to be created between 2022-2027 assuming that the surplus labor in the preceding years have all been employed. However, in the next five years after 2027, the number of additional jobs required would decrease to 23 thousand. If the required number of jobs is created to accommodate the new entrants into the labour force, it is projected that by 2047 there will be surplus jobs in the economy, which means that there will be more job than the labour force. However, to realize that, about 110 thousand jobs will need to

be created between 2019 and 2042 which is a little less than 5 thousand jobs per year for the next 24 years.

When a country is experiencing the demographic dividend, more young people are expected to be in the labour force. In 2019, labour force is expected to peak in the age group 20-24 years indicating a young labour force (Figure 5.4). However, over the next decades the peak is observed to be moving from 20-24 to the older age groups. By the end of 2047, Bhutan's labour force will be composed of those persons in the ages 60-64 years. In terms of size, it would double from 15 thousand in 2019 to 38 thousand in 2047. Bhutan will also experience the shrinking of young labour

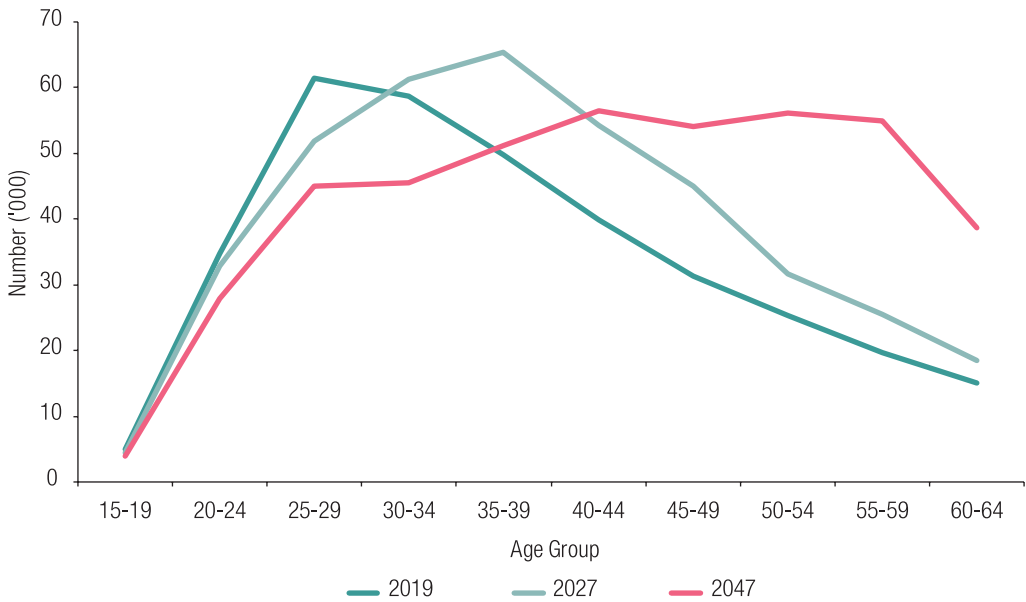
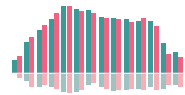


Figure 5.4 Projected labour force by age group, 2019 - 2047, Bhutan

force (15-39 years) from 61% in 2019 to 39% in 2047. This is a clear indication that the window of opportunity for Bhutan to reap the demographic dividend will start to close over the next few decades.

A similar pattern of labour force is also seen among different age and sex. It was observed that there was a huge number of labour force in the younger age groups for both the sexes in 2019, which is moving towards the older age group by 2047 (Figure 5.5). However, a huge disparity between male and female labour force size is observed due to lower work participation rate among females. The overall sex ratio for the projected period ranges between 105 and 109 males per 100 females. Since the labour force is

dominated by male population ranging from 132 to 142 males per 100 females, a policy initiative to boost the female labour force participation rate is recommended.

At the Dzongkhag level, the labour force was projected using the labour force participation rate by the Dzongkhags and the proportion of labour force distribution by Dzongkhags. The labour force participation rate and the proportion of labour force distribution by Dzongkhags in 2018 was assumed to remain constant during the projection period.

In 2047 the labour force in Thimphu is projected to reach 73 thousand which is roughly one sixth of the total labor force in the country followed by Samtse,

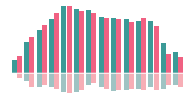
HARNESSING DEMOGRAPHIC DIVIDEND IN BHUTAN



Figure 5.5 Projected Labour Force by Sex, 2019-2047, Bhutan

Table 5.5 Projected Labour Force by Sex and Dzongkhag, 2019 and 2047

Dzongkhag	Projected Labour Force					
	Female		Male		Total	
	2019	2047	2019	2047	2019	2047
Bumthang	3,771	5,010	4,122	5,091	7,893	10,101
Chhukha	9,154	12,162	18,283	22,578	27,437	34,739
Dagana	5,825	7,739	7,573	9,351	13,398	17,090
Gasa	665	883	865	1,068	1,530	1,952
Haa	2,888	3,837	3,903	4,820	6,791	8,657
Lhuentse	3,356	4,459	3,571	4,410	6,927	8,869
Monggar	9,060	12,037	10,594	13,083	19,654	25,119
Paro	10,637	14,132	13,111	16,191	23,748	30,323
Pema Gatshel	4,929	6,549	6,537	8,072	11,466	14,621
Punakha	5,880	7,812	7,027	8,677	12,907	16,490
Samdrup Jongkhar	7,187	9,548	9,841	12,152	17,028	21,700
Samtse	15,617	20,747	21,815	26,939	37,431	47,686
Sarpang	5,800	7,706	12,019	14,843	17,819	22,548
Thimphu	20,085	26,684	38,078	47,025	58,163	73,709
Trashigang	11,168	14,837	12,223	15,094	23,391	29,931
Trashi Yangtse	3,939	5,234	5,032	6,214	8,971	11,448
Trongsa	4,248	5,643	4,338	5,358	8,586	11,001
Tsirang	5,345	7,101	6,377	7,874	11,722	14,976
Wangdue Phodrang	8,748	11,623	11,079	13,682	19,828	25,305
Zhemgang	2,552	3,391	4,137	5,109	6,690	8,500
Bhutan	140,855	187,134	200,526	247,632	341,381	434,765



Chhukha and Paro with 47, 34 and 30 thousand. For all other Dzongkhags, the labour force will peak in 2042 and decline thereafter.

While most of the Dzongkhags are projected to have surplus of male in the labour force in 2047, a few Dzongkhags such as Bumthang and Trashigang is projected to have an equal number of males and females in the labour force. On the contrary, Lhuentse and Trongsa are projected to have a little

more females than males in the labour force. A marked difference in the male and female labour force is observed in Thimphu, Chhukha, Sarpang and Samtse with 20, 10 and 6 thousand in 2047. The low female labour force participation rate in these Dzongkhags has resulted into a low female labour force. However, as fertility is rapidly declining and more women having less children, the female labour force participation rate is expected to increase.

Chapter 6: Conclusions and Recommendations

Bhutan has already entered into the demographic dividend phase, as the dependency ratio has started falling from 61% in 2005 to 47% in 2017. By this time, it has dipped crossing the threshold level of 50%, thereby the period of window of opportunity has already started accruing. The dependency ratio is expected to fall further to 41% by 2027 and will hover around that level till 2032. This is the time when the country will be having the window of opportunity fully opened. After 2042, the dependency ratio will start increasing and reach to 43% in 2047 but this is still below the threshold level. This implies that the demographic dividend period will continue to be available in the country even after 2050 and will remain for a decade or so, after which it will start closing.

Though the country as a whole will be in advantageous situation, the sub-national level analysis of demographic dividend suggest that that the period of window of

opportunity varies by geographic regions. While there will be the demographic dividend in the western region it is observed that the eastern region may not experience the demographic dividend in the foreseeable future. It is mainly due to the migration of working-age population to western and central regions. Therefore, any planning intended for harnessing the demographic dividend has to consider this phenomenon.

Based on the projected working-age population and the current labour force participation rate, as well as with the assumption that the current LFPR would remain constant during the projection period, the size of future labour force is estimated. Assuming constant LFPR provides a scenario, wherein at least given size of work force will be available, if not more, in case of any increase in the participation rate into work force in future years. Such analysis helps in estimating the new entrants into the labour market

in future due to population dynamics of increasing size and share of working-age population. This in turn provides useful information about the number of jobs to be created in future, for which planning has to begin now. It is estimated that around 32 thousand additional jobs would be required by 2022. Further, between the periods 2022 to 2027 an additional of 20 thousand jobs will be needed, while for the next five-year period, additional job requirement will be of the tune to 13 thousand. If we cumulate these numbers of additional jobs needed in within one and half decades, the figures are seemingly very high and planning to provide decent job opportunity will be the need of the hour.

The potential gains in economic output and improved well-being depends on the productive capacity of each new person that enters the labour force. In case of high unemployment rates, the dividend would not be realized to the desired extent. Coupled with this, the productivity of the employed labour should be high to make the most of the opportunity into reality. This calls for enhancing skills of the existing as well as new entrants into the labour force. To convert the dividend into substantial gains, various measures have to be initiated. The study proposes such initiatives in the form of recommendations.

Recommendations

The time-bound window to take advantage of favorable demographic conditions is quickly closing. Looking at the projected change in the dependency ratio, the region has approximately 30 years to exploit the growing labour force before the number of elderly persons starts to significantly increase, thus limiting savings, investment and future output potential.

Based on the findings of the analysis of demographic window of opportunity and its consequences on the requirement of additional jobs in future, the study proposes the following recommendations:

1. Investment in the Human Capital:

The remaining benefits will be largely determined by the human capital base of the workforce. The kind of skills needed for the future labour force entrants needs proper planning in line with the occupation diversifications options. Young people has to be prepared so that they are fully equipped with competencies to suit the diversified occupational categories. For example, if the country wish to promote IT sector, training institutions are to be opened up now and strengthened those are already in place, with policy measures. This will help meeting demand for skilled labour forces as per the future plan of expansion of job market in the country. Similarly, various training avenues

needs to be planned for creating a cadre of geriatric care providers which will be required in future. The government needs to explore various options of economic diversification and accordingly plan for preparing the human resources to reap the benefit of demographic transition.

2. Strengthen social security and well-being measures in eastern region:

Due to regional imbalances in the demographic dividend and less number of workers in the eastern region, the dependency ratios are higher and will remain high in coming decades. This calls for strengthening the social security measures in all Dzongkhags in the eastern region to have a mechanism in place to take care of the elderly. Due to population ageing, the proportion and number of aged dependents will increase in future and therefore planning for their care, pensions and social security measures needs to be initiated on the priority basis.

3. Develop regional hubs for equitable population distribution and decongestion:

The analysis of census data on migration clearly indicates the movement of population from eastern to western region and this has a bearing on reaping the benefits of the demographic dividend. In order to diversify and have equitable spatial distribution of population, and to

provide jobs to new entrants to the labour force, regional development model should be developed and adopted.

4. Plan for creating additional jobs in coming future:

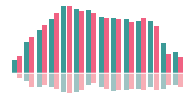
Policies and plans are to be devised on urgent basis to boost the availability of newer jobs in anticipation of the future entrants of population in the working-age. The study has estimated the future likely number of additional jobs requirements and a roadmap of enhancing livelihood options and opportunity has to be prepared as soon as possible.

5. Improve female labour force participation rate:

The female work participation rate has been lower than their male counterparts and over the years, this would decline further. In order to reap the benefits of demographic dividend, it is not only important to create jobs, but also to encourage and provide opportunities for females so that more and more of those willing to work can join the labour force and contribute to the economy.

6. Plan for occupational diversification:

There is a need to plan for occupational diversification to accommodate the new entrants into job markets. Keeping the pace of digital development, Information Technology (IT) sector needs to be developed along with



planning of job creation in many other sectors such as care services. Due to population ageing, care economy has to be developed as more and more number of elderly will require various kinds of services in future. Similarly, options for diversification of jobs needs to be explored and action to be initiated to make it happen.

- 7. Establish a think tank and sectoral tasks forces to translate vision into action:** There is a need to have a central body of think tank, comprising of experts from various fields and relevant stakeholders. The main purpose of this think tank will be to suggest feasible plans and programmes for future and keeping an eye of the execution of such initiatives. This body could be assisted by establishment of sectoral Tasks Force, to translate the vision into action and support the government of Bhutan in preparing policies and relevant programmes in various sectors.

ANNEX I: PROJECTED POPULATION BY BROAD AGE GROUP(15-59 CONSIDERED AS WORKING-AGE), AND BY DZONGKHAG, BHUTAN 2005-2047

	2005				2017				2022				2027			
	0-14	15-59	60+		0-14	15-59	60+		0-14	15-59	60+		0-14	15-59	60+	
Bumthang	4,966	9,723	1,427		4,930	11,151	1,754		4,588	11,717	1,987		4,410	12,061	2,309	
Chukha	22,732	48,670	2,985		17,078	47,331	4,589		15,708	48,953	5,159		14,888	49,848	5,905	
Dagana	7,060	9,881	1,281		7,024	15,451	2,508		6,496	16,380	2,856		6,197	17,032	3,299	
Gasa	1,019	1,824	273		1,086	2,518	350		1,068	2,802	419		1,084	3,055	514	
Haa	3,705	7,125	818		3,582	8,944	1,137		3,273	9,266	1,273		3,090	9,418	1,456	
Lhuentse	5,455	8,421	1,519		4,263	8,498	1,570		3,654	8,333	1,644		3,166	7,838	1,719	
Monggar	12,947	21,035	3,087		11,399	21,784	3,998		10,066	22,014	4,303		9,127	21,627	4,715	
Paro	10,832	22,870	2,731		11,406	30,934	4,007		11,422	34,598	4,902		11,797	37,998	6,091	
Pema Gatshel	4,672	7,546	1,646		6,512	13,834	3,311		5,875	14,264	3,660		5,457	14,373	4,106	
Punakha	5,861	10,342	1,512		7,364	18,703	2,694		7,158	20,437	3,195		7,179	21,915	3,892	
Samdrup Jongkhar	14,044	22,986	2,931		9,810	22,027	3,265		8,823	22,479	3,606		8,158	22,470	4,033	
Samtse	20,337	35,515	4,248		16,884	39,466	5,919		15,320	41,112	6,606		14,225	41,758	7,435	
Sarpang	14,249	24,943	2,357		11,215	30,697	4,121		10,868	33,721	4,883		10,867	36,411	5,914	
Thimphu	29,692	64,600	4,384		32,861	98,083	7,851		34,422	113,980	9,985		37,083	129,637	12,952	
Trashigang	17,877	28,957	4,300		12,596	27,992	4,969		10,728	26,945	5,180		9,280	25,155	5,417	
Trashi Yangtse	6,441	9,749	1,550		5,582	9,895	1,835		4,867	9,860	1,970		4,350	9,528	2,125	
Trongsa	4,584	7,507	1,328		4,124	14,245	1,606		4,292	16,555	2,022		4,300	17,518	2,438	
Tsirang	6,343	10,775	1,549		5,874	13,877	2,646		5,568	15,132	3,072		5,443	16,177	3,639	
Wangdue Phodrang	10,551	17,927	2,657		10,689	28,099	3,427		10,705	31,973	4,179		10,569	33,856	4,979	
Zhemgang	6,592	10,308	1,736		5,138	10,424	2,220		4,410	10,193	2,323		3,861	9,658	2,461	
Bhutan	209,959	380,704	44,319		189,417	473,953	63,775		179,312	510,713	73,224		174,532	537,333	85,399	

ANNEX I: PROJECTED POPULATION BY BROAD AGE GROUP(15-59
CONSIDERED AS WORKING-AGE), AND BY DZONGKHAG, BHUTAN 2005-2047

	2032				2037				2042				2047			
	0-14	15-59	60+		0-14	15-59	60+		0-14	15-59	60+		0-14	15-59	60+	
Bumthang	4,310	12,131	2,697		4,065	12,142	3,139		3,782	11,848	3,780		3,523	11,333	4,497	
Chhukha	14,432	49,612	6,839		13,527	49,075	7,887		12,504	47,521	9,476		11,620	45,123	11,282	
Dagana	6,046	17,268	3,837		5,673	17,462	4,430		5,273	17,166	5,342		4,911	16,513	6,403	
Gasa	1,125	3,248	633		1,122	3,440	776		1,103	3,557	986		1,089	3,601	1,242	
Haa	2,993	9,329	1,680		2,785	9,198	1,928		2,566	8,844	2,294		2,364	8,319	2,715	
Lhuentse	2,748	7,088	1,780		2,256	6,270	1,794		1,784	5,249	1,831		1,361	4,143	1,784	
Monggar	8,357	20,629	5,158		7,332	19,504	5,571		6,309	17,778	6,221		5,390	15,744	6,789	
Paro	12,348	40,784	7,645		12,463	43,493	9,508		12,378	45,293	12,221		12,317	46,168	15,582	
Pema Gatshel	5,134	14,117	4,614		4,636	13,792	5,139		4,130	13,015	5,915		3,664	11,981	6,738	
Punakha	7,345	22,975	4,754		7,220	24,014	5,754		7,003	24,486	7,225		6,806	24,476	8,983	
Samdrup Jongkhar	7,666	21,871	4,536		6,920	21,154	5,050		6,153	19,871	5,829		5,469	18,188	6,663	
Samtse	13,492	41,360	8,394		12,328	40,723	9,423		11,123	38,975	11,057		10,058	36,498	12,832	
Sarpang	11,121	38,417	7,215		10,957	40,334	8,758		10,669	41,285	11,095		10,424	41,456	13,894	
Thimphu	40,462	143,774	16,966		42,637	157,763	22,052		44,189	169,303	29,634		45,770	178,164	39,219	
Trashigang	8,025	22,588	5,603		6,539	19,811	5,628		5,107	16,427	5,701		3,839	12,770	5,500	
Trashi Yangtse	3,910	8,913	2,278		3,354	8,227	2,409		2,804	7,288	2,611		2,309	6,201	2,767	
Trongsa	4,382	18,184	2,979		4,322	18,738	3,633		4,196	18,926	4,569		4,085	18,783	5,686	
Tsirang	5,429	16,886	4,330		5,216	17,542	5,129		4,954	17,703	6,317		4,726	17,466	7,731	
Wangdue Phodrang	10,609	35,133	5,982		10,338	36,207	7,191		9,973	36,491	8,966		9,654	36,071	11,116	
Zhengang	3,399	8,811	2,590		2,829	7,909	2,658		2,284	6,745	2,773		1,795	5,479	2,790	
Bhutan	173,331	553,117	100,509		166,519	566,799	117,858		158,286	567,772	143,842		151,175	558,479	174,212	

ANNEX II. DEPENDENCY RATIOS (15-59 CONSIDERED AS WORKING-AGE), BY DZONGKHAG, BHUTAN 2005-2047

	Dependency ratio							
	2005	2017	2022	2027	2032	2037	2042	2047
Bumthang	66	60	56	56	58	59	64	71
Chhukha	53	46	43	42	43	44	46	51
Dagana	84	62	57	56	57	58	62	69
Gasa	71	57	53	52	54	55	59	65
Haa	63	53	49	48	50	51	55	61
Lhuentse	83	69	64	62	64	65	69	76
Monggar	76	71	65	64	66	66	70	77
Paro	59	50	47	47	49	51	54	60
Pema Gatshel	84	71	67	67	69	71	77	87
Punakha	71	54	51	51	53	54	58	65
Samdrup Jongkhar	74	59	55	54	56	57	60	67
Samtse	69	58	53	52	53	53	57	63
Sarpang	67	50	47	46	48	49	53	59
Thimphu	53	42	39	39	40	41	44	48
Trashigang	77	63	59	58	60	61	66	73
Trashi Yangtse	82	75	69	68	69	70	74	82
Trongsa	79	40	38	38	40	42	46	52
Tsirang	73	61	57	56	58	59	64	71
Wangdue Phodrang	74	50	47	46	47	48	52	58
Zhemgang	81	71	66	65	68	69	75	84
Bhutan	67	53	49	48	50	50	53	58

Note: In the 15-59 working-age, the dependency ratio of less than 67% is considered to be advantageous

Notes

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