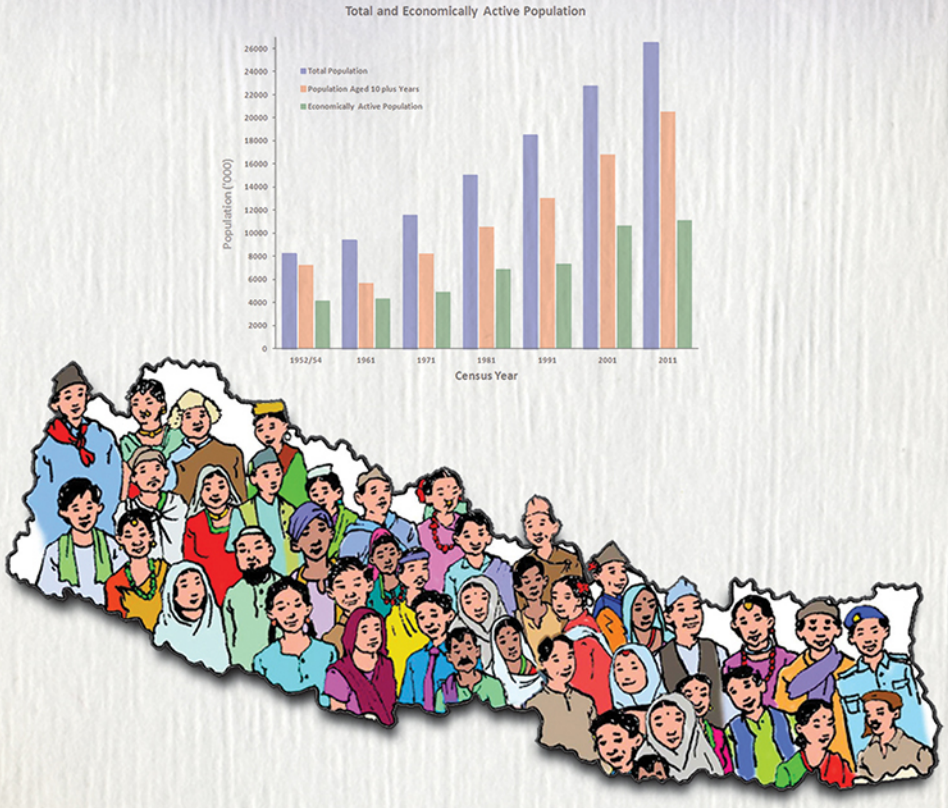
POPULATION MONOGRAPH OF NEPAL

VOLUME III
(Economic Demography)



Government of Nepal
National Planning Commission Secretariat
Central Bureau of Statistics
Ramshah Path, Kathmandu, Nepal
2014

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Vice-Chairman

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FOREWORD

The National Population and Housing Census 2011 (NPHC2011) marks hundred years in the history of population censuses in Nepal. Nepal has been conducting population censuses almost decennially and the census 2011 is the eleventh one, which was successfully carried out by the Government of Nepal. The census 2011 has been an historical event in many ways. It has successfully applied an ambitious questionnaire through which numerous demographic,social and economic information has been collected.

The 2014 Population Monograph that is being issued in three volumes, is the result of rigorous analysis of the information collected in the census and provides a comprehensive and in-depth picture of different aspects of the population in Nepal which is extremely important for planners, policy makers, researchers, private sectors and other users.

On behalf of the National Planning Commission, I would like to thank the members of the Population Monograph Management Committee headed by Bikash Bista, Director General, Central Bureau of Statistics. I would also like to thank all agencies and individuals, authors, reviewers and CBS staffwho have contributed in bringing the publication in this form.

Any valuable comments from the readers would help in improving the Monograph in the future.

December, 2014

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PREFACE

The National Population Census 2011 has provided a wealth of information that is required to understand various socio-economic and demographic changes that have occurred in the country during the intervening period of the two censuses. The Population Monograph of Nepal 2014, an analytical report of the census 2011 presented in three volumes contains in-depth analysis of different topics related to the population of the country prepared by the eminent professionals dealing with such issues in their professional work. The first volume contains 12 chapters related to the population dynamics of Nepal, such as size and structure of the population, nuptiality, fertility, mortality, migration and population projections. The second volume contains 10 chapters on social demography dealing with caste/ethnicity, language, ageing, socioeconomic characteristics, status of gender, education, adolescents and youth, children and disability. Similarly, the third volume consists 9 chapters which include important interlinkages of population and economic variable such as economic activities, urbanization, economic development, environment, status of agriculture and other poverty indicators. Data has been disaggregated by caste, ethnicity, gender and spatial distribution wherever possible. Each chapter has been further reviewed by experts and edited by a professional editor to ensure consistency in the language and terminology used. On behalf of the Central Bureau of Statistics (CBS) and on my own behalf, I am grateful to all those authors, co-authors and reviewers who have contributed with write-ups and thorough review.

Thanks are due also to CBS staff for their dedication to bring out this publication in time.

Similarly, Giulia Vallese, UNFPA Representative, Bijay Thapa, Assistant Representative, Tirtha Man Tamang, Programme Officer, UNFPA Country Office and Nicholas McTurk, Population and Development Specialist, APRO/UNFPA deserve our special appreciation not only for their active involvement and encouragement in bringing these volumes to light, but also for their contribution in coordinating development partners' contribution in the refinement of the various chapters.

Finally, I would like to thank all respondents who provided invaluable information during the field operation and appreciate all those who had extended hands in this national endeavor and helped to make the census a grand success.

I welcome suggestions from the users of these volumes in order to improve CBS publications in future.

December, 2014
Kathmandu, Nepal.

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Director General

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VOLUMES AND CHAPTERS

Volume I (Population Dynamics)

Volume II (Social Demography)

Volume III (Economic Demography)

EXECUTIVE SUMMARY

1. Volume I (Population Dynamics)

1.1 Nepal has been conducting population censuses since 1911. The first four censuses were conducted under the Rana Regime and were limited to specific purposes. In 1952/54, the first attempt was made to collect internationally comparable data from the census. Computers were used first in 1971. The census of 1991, the first after the restoration of democracy, collected information on caste and ethnicity. The census of 2001 introduced sampling in the census for the first time. The National Population Census of 2011 is the eleventh census and marks 100 years in the history of census taking in the country.

1.2 The total population of Nepal, as of 22 June 2011, was 26.5 million with a decadal increase of 14.4% from 2001. The population a decade age, or in 2001, was 23.2 million. The average annual growth rate of the population from 2001 to 2011 was 1.35%, a sharp decline from the 2.25% of the previous decade 1991-2001. The number of households stands at 5.4 million in 2011.

1.3 Households with 1 to 4 members are highest in the census 2011, whereas 5 person households were highest in the 2001 census. Female-headed households have increased by 11 percentage points from 14.87% in 2001 to 25.73% in 2011.

1.4 The number of housing units enumerated in 2011 stands at 4,466,931, which has increased by 868,719 units over the last ten years. Most households live in their own house. However, households residing in rented houses have been gradually increasing in urban areas. Ownership of housing in Tarai and eastern development regions was found to be comparatively low. Most of the houses in Nepal were eleven to twenty years old with single floors. The average number of households per house has increased from 1.16 in 2001 to 1.21 in 2011.

1.5 Discrepancies in access to household amenities and facilities (such as radio, television, mobile phone, vehicles etc.) exist in different parts of the country. The coverage of improved source of drinking water has substantially increased. However there was no substantial change in the use of solid fuel (firewood, leaves, cow-dung and agricultural residue) for cooking. On the contrary, the share of kerosene as cooking fuel has drastically decreased and the percentage of LPG users has significantly increased between the two censuses. Similarly, the coverage of kerosene as a source of lighting fuel has sharply declined during the census periods. Electricity is now a major source of lighting fuel and its coverage has significantly increased in 2011 compared to 2001. The coverage of toilet facilities has also increased during the intercensal period, exceeding 90% in urban areas. A higher disparity was observed in the possession of consumer durable goods and services among urban/rural, ecological zones and development regions.

1.6 The decline in population growth rate from 2.25% in 2001 to 1.35% in 2011 was attributed both to a decline in fertility and the emigration of youth. It will take 51 years to double the population of 2011 if the present growth rate prevails. The growth rate varies in urban and rural areas with 3.38 and 0.98 percentages per year respectively. The highest growth rate (4.78%) is observed in Kathmandu. Twenty-seven (27) districts, all from Mountain and Hill, have experienced negative growth over the last decade. It has been observed that the proportion of the population is gradually declining in Mountain and Hill and steadily increasing in Tarai. The urban population (58 municipalities) accounts for 17.1% of the total population compared to 14.2% in 2001. If the recently declared 72 municipalities are included, making 130 municipalities in total, the urban population is 27% of the total population.

1.7 The sex ratio of Nepal is 94 (94 males per 100 females) in 2011, the lowest in the SAARC region. The ratio was higher (104) in urban areas against 92 in rural areas. The ratio, if looked at by age groups, was found to be lowest in age groups 20-24, 25-29 and 30-34. In 2011, 43 districts were observed to have a sex ratio below 94,

against 20 in 2001 and 6 in 1981. The proportion of children age 0-4 was 9.7% of the total population in 2011, a sharp decline from 15.4% in 1981. On the other hand, the older population (population of age 65 +) has increased from 3.3% in 1981 to 5.3% in 2011. The median age has increased from 18.92 in 1991 to 22.26 in 2011, indicating the gradually ageing population of the country.

1.8 Universality of marriage still prevails in Nepal, although the proportion of single persons is growing. The mean age at marriage for both males and females has increased in both urban and rural areas. Child marriage seems to be persistent in the country. Half of the marriages of ever married persons aged 25 years and below took place before the age of 18, which is the minimum age for legal marriage. Singulate mean age at marriage (SMAM) between males and females is positively correlated with level of education. Divorce rates are an increasing trend. Education and employment programmes should be targeted more to the areas (specifically in central Tarai and mid western hill and mountain) where SMAM is relatively low.

1.9 The census of 2011 indicates that fertility has been declining at a faster rate over the last decade. The crude birth rate for the year 2011 is estimated to be around 22 per thousand. Similarly, the total fertility rate (TFR) of a woman throughout her lifetime is expected to be around 2.52 children against 3.25 in 2001. The rate is even lower in urban areas at just 1.54, which is below fertility replacement levels. This means that the number of children born to a mother in urban areas is not sufficient to replace parents. The rate was 3.04 children in rural areas.

1.10 Mortality is also a declining trend. The crude death rate (CDR), which shows the number of deaths per thousand populations, is estimated to be around 7.3 per thousand populations in 2011 against 10.3 in 2001 . The rate is found to be lowest in Tarai, which differs from other demographic indicators of this region. CDR is reported to be lowest in Saptari, Sarlahi and Rautahat. This unusually low rate is attributed to gross underreporting of deaths in the census in that region as the infant mortality rate (IMR) was estimated to be 81 in Rautahat, which is the highest in the country. The CDR of Bhaktapur is the in the country . The IMR was 24 and 43 per thousand live births in urban and rural areas respectively. The rate was highest in Mountain followed by Tarai and Hill. The maternal mortality ratio, which is estimated for the first time on the basis of census data, stands at 480 per hundred thousand live births. The ratio seems to be higher compared to the estimates provided by NDHSs and other sources. The MMR estimated on the basis of census data is just a one point in time estimate so no comparison can be made with other sources. However, the rate is thought to be definitely a declining trend although the level can only be confirmed after the estimate is provided by the next census. MMR is highest again in Tarai (634) followed by Mountain (561) and Hill. Mid-West mountain had 1004, the highest among the ecological development regions.

1.11 Life expectancy at birth (e0) for the census year 2011 is estimated at 66.6 years against 49.6 in 1981. The life expectancy of females has overtaken males in the last 30 years. Life expectancy at birth for females has increased from 48.1 years in 1981 to 67.9 years in 2011. Estimates of life expectancy at birth for urban and rural areas stand at 70.5 and 66.6 years respectively in 2011. Life expectancy is highest in Hill followed by Mountain and Tarai. Life expectancy is estimated for all 75 districts. Bhaktapur, Kaski, Lalitpur, Kathmandu and Parbat have the highest life expectancy where as Dolpa, Humla, Bajura, Kalikot, Mugu of Mid-West mountain have the lowest. Similarly, Dhanusha, Rautahat and Sarlahi also have the lowest life expectancy.

1.12 Migration has become a prominent phenomenon in the population dynamics of Nepal. Emigration has been outnumbering immigration, which is thought to have had a substantial effect on the decline in fertility. A large volume of the youth population has been consistently moving abroad to different destinations of the world. The absent population of Nepal has been a major issue in demographic, social and economic aspects of the country. The absent population reported in 2011 was 1,921,494, a big jump from the number of 762,181 of the census of 2001. The emigration rate, the number of emigrants (out movers) per thousand population stands at 10.77, whereas the immigration rate is estimated to be 0.46 per thousand populations. Thus, gross and net migration rate stand at 11.23 and 10.32 per thousand respectively. The proportion of female migrants out of total migrants was 12.4% in 2011.

India is still a destination for 37.5% of emigrants in 2011, but the rate has been declining compared to 1981. In 1981, 93.1% of emigrants were destined for India. Most male migrants (47%) were from the age group 15-34 in 2011. ASEAN and the Middle East were other popular destinations. Western hill districts such as Gulmi, Arghakhanchi and Pyuthan had the highest number of households with absent members. In terms of population, districts of Western Hill and Tarai reported the highest number of absentees.

Approximately 2.8% of the total population were born in countries other than Nepal in 2011, an increase from 1.6% in 1981. Of the total foreign-born population, 28.7% reported that they were born in India in 2011; this figure was 29.4 % in 1981. Regarding the length of stay in Nepal, 54% have been living in Nepal for more than10 years (48% males and 57% females). Fifteen per cent reported that they had been living in Nepal for 6-10 years and 20% for 5 years or less.

1.13 Internal migration is also an important aspect of Nepalese demography. Horizontal (Hill to Hill) and vertical (Mountain and Hill to Tarai) movement of the population has substantially changed the spatial distribution of the population in Nepal. Every political change, be it the victory of King Prithvi Narayan Shaha, or the democratic movement of 1951 or the recent political events of 2005/06 has resulted in a huge tide of population movement in Nepal.

Altogether, 2.6 million inter-district migrants were reported to be lifetime migrants in 2011, an increase from 1.5 million in 1981. The volume of inter-zonal migrants was 2.1 million, out of that about 1.5 million were destined for Tarai. Altogether 56 districts, 49 districts (16 from Mountain, 33 from Hill and 7 from Tarai) experienced net out-migration. Out of the total internal migrants, 84% were literate and 60% were females.

It was reported that 4% of the population cross regional boundaries every year. Districts usually receive populations from adjoining or nearby districts. For example, Kavrepalanchowk, Sindhupalchowk, Dolakha, Ramechhap Dhading, Nuwakot, Makawanpur, Sindhuli, Sarlahi etc. were the source districts for Bhaktapur, Kathamandu, Lalitpur. Similarly, Kathmandu, Udayapur, Morang, Sunsari, Lalitpur, and Jhapa were the destinations for populations from Khotang, Bhojpur and Terhathum.

Volume II (Social Demography)

2. 1 Nepal's child population of age 14 and below constitutes 34.9% of the total population. Children age 16 years and below make up 39.8% of the population and 44.4% are below 19 years. Despite various legislative and programmatic measures to ensure the rights of children, they are still facing many problems that lead to uncertainty and vulnerabilities in their lives.

2.2 There were nearly 9 million young people aged 10-24 years in the country in 2011, which is one third of the total population made up of 51.5% females and 48.5% males. Similarly, adolescents, the young population of 10-19 years, make up 24.2% of the population and youth of the age group (15-24) years make up almost 20% of the total population of Nepal. The distribution of young people across the country by region shows that a significant number of youths live in the Central Development Region, about 36% of the total population of young people, and about one tenth (10%) live in Far-Western Development Region. Similarly, the majority of young people (82%) live in rural areas and almost half of the young people of the country live in the Tarai. Approximately, 9% of the youth of 15-19 years and 21% of the group age 20-24 years reported that they were working and 1% of children of age 10-14 are also employed.

2.3 With the improvement in living standards, educational status and health facilities, the life expectancy of the Nepalese population has been increasing. The ageing index, which indicates the number of old people compared to children, has been consistently increasing over decades. The index has increased from 7.78 in 1971 to 15.50 in 2011.

2.4 The analysis of data has indicated remarkable achievements in the status of literacy, educational attainment and/or school attendance rates of both the male and female population over the years. However, disparities continue to exist across sex, rural-urban, districts and regions. Overall literacy rates have increased to 67% in 2011 from 54% in 2001. Female literacy has increased from 43% in 2001 to 58% in 2011, which places Nepal in fourth position among SAARC countries and above Bhutan, Pakistan, Bangladesh, and Afghanistan. About 90% of adolescents can read and write. Similarly, 69% of the population are attending school. Literacy rates of urban and rural areas stand at 82.3% and 62.5% respectively. Kathmandu has the highest literacy rate while Rautahat has the lowest.

2.5 The overall prevalence of disability as of the census of 2011 was 2% in Nepal, with 2.2% prevalence of male disability and 1.7% prevalence for females. The odds ratio of having a disability were 1.3 times more in males compared to females. Physical disability was the most common type of disability, which accounted for more than one third of total disabilities. Physical disability and blindness/low vision combined accounted for more than 50% of total disabilities. Disability in rural residents was more prevalent (2.1%) compared to disability in their urban counterparts (1.2%). The prevalence of disability was considerably higher in Mountain (3.0%) compared to Hill (2.2%) and Tarai (1.6%). More than one third of the disabled are less than 30 years old and only one-fourth of disabled persons are aged 60 years or more. The percentage of persons with a disability in the economically active age group (15 – 59 years) was higher in urban areas (59.5%) than in rural areas (56.1%). The proportion in older ages (60 and above) was higher among women (27.2%) compared to men (24.3%). Disability was significantly higher among illiterates (3.87%).

2.6 Gender equality is a key component of human development, but overall by sector Nepal still has a gender gap. As mentioned above, the female population exceeded the male population in 2011; as a result the sex ratio is low in Nepal mainly due to the huge outflow of youths from Nepal to the Middle East and East Asian countries. Female literacy has remarkably increased in the past decades as indicated above. Similarly, life expectancy of women has increased to 69.6 years, higher than men. There has been a rise in female-headed households in 2011 due to the increase in male migration. Nepal has experienced a decline in maternal mortality in past decades. But, economic empowerment is still a challenge. Only 20.5% of women have assets in 2011, although the proportion has increased from 17.1% in 2001. In addition, women's economic activity is still low in non-agriculture sectors possibly due to a lack of education and a tradition of working in agriculture. Naturally, women engaged in self-employment activities and/or unpaid family labour is very high (64% of females in total). Nevertheless, there has been an increase in female international migration (12.4% in 2011) in recent years. Although the gender gap between males and females in many areas has improved compared to previous censuses, the change is not significant, To overcome the existing gap, allocation and implementation of the gender responsive budget (GRB) has been recommended.

2.7 Identity has been an important issue since the restoration of democracy in 1991. Therefore, a question on caste was included in the censuses conducted in 1991, 2001 as well as in 2011. In fact, data on caste was first included and processed in the census of 1952/54 in Nepal. The total number of castes identified in the census of 2011 was 125, an increase from 100 in 2001 and from 60 in 1991. The increase in the number of castes in the census of 2011 was mainly due to people's awareness of their identity. Chhetri is the largest caste in terms of number (16.6%) as has been the case in all censuses, followed by Hill Brahmin, Magar, Tharu, Tamang, Newar, Kami, Musalman, Yadav and Rai. Substantial population increases in Kami, Patharkata, Hylhmo, Badi and Munda were recorded in 2011. However, the population of these castes is low in number. On the contrary, the population of Kayastha, Raute, Rai, Nurang, Kisan, Sunuwar, Sherpa, Bhote, Lepcha and Chidimar was less in 2011 compared to 2001. Twelve sub groups that were under Rai in the previous census were reported and classified separately in 2011.

Hinduism is reported to be the religion of 81.34% of the population followed by Buddhism (9.04 %), Islam (4.38%), Kirat (3.04 %), Christianity (1.41%), Prakriti and Bon. Christianity has seen a substantial increase in the number of its followers in the last ten years, although the number is still small compared to other religions.

2.8 One hundred and twenty three (123) languages were identified in the census of 2011, an increase from 92 reported in 2001. Nineteen mother tongues were spoken by 96% of the population, while 104 languages were spoken by 4% of the total population. Nepali is spoken by 44.64% of the population in 2011, which was reported to be spoken by 48% in 2001. The majority of the population (59%) were reported to be monolinguals and 41% of the population speak at least one second language.

2.9 Demographic and social indicators of the Nepalese population have been improving on the whole, but, the trend and pattern vary by caste and by region. For example, the population growth rate of different castes varies. Chhetri population is growing annually by 2.%, Brahmin by 1.08%, Magar by 1.52%, Tharu by 1.25%, Tamang by 1.85%, Newar by 0.59%, Kami by 3.46%, Yadav by 1.64% and Rai by 0.24%.

Household size varies by caste. For example, Musalman has a household size of 6.5 persons, Madhesi of 6.0, Newar's of 4.5 and hill Brahmin's of 4.2 persons.

Mean age at marriage is highest for Newar's at. 23 years followed by Hill Brahmin's. This age is lowest for Madhesi Dalits and Musalman. Kayastha, Marwadi, Dev, Brahmin, Thakali and Newar were among those who ranked top in literacy. A Musalman woman gives birth to 3.7 children in her lifetime while a Newar woman gives birth to only 1.73 children. However, at the national level, the TFR is declining faster than over the last decade.

Anomalies exist in life expectancy by caste. Estimates of life expectancy seem to be high for Madhesi Dalits, which may be misleading about the socio-economic status of this caste. In fact, illiterate and socially backward castes usually have high mortality, but there is a higher tendency to underreport deaths.

One fourth of hill Dalits do not have access to a supply of safe drinking water. Similarly, only one tenth of Madheshi Dalits had a toilet facility in their housing premises. Eighty three per cent of Hill Brahmin and Newar possess cell (mobile) phones whereas a little over one third of Dalits have one.

In a nutshell, people of Mid-West Mountain and Hill, and Central Tarai are lagging behind in terms of most socio-economic indicators. Eastern, Central, Western hill and Western Tarai are reported to be relatively well-off, although some pockets and selected caste groups of Hill are also reported to be deprived of facilities and amenities. Most Madhesi people are engaged in elementary works whereas Hill people are engaged in professional work.

Volume III (Economic Demography)

3.1 Nepal's urbanisation level is low and much of its urbanisation is induced. Twenty seven per cent of Nepal's population lived in 130 designated urban areas or municipalities in 2014. Today, 62 districts have at least one municipality. Designated municipalities are referred to as urban areas and 7.2 million people live in such municipalities currently. Despite a low level of urbanisation, the annual growth rate of the urban population is 8%, about 6 times higher than the national population. This growth rate is mainly due to the additions in the number of municipalities during the intercensal periods. Regional differences are evident with the central development region and Tarai being more urbanised than mid-west and Mountain. Urban areas of 20,000 to 49,999 people dominate in number and population share. The urban population is relatively mature and literate compared to the rural population. Most of the urban areas, especially those newly declared and those in the Mountain and mid-and far-west, have a rural character in respect to physical facilities, literacy, occupational structure and educational attainment.

3.2 There has been a remarkable shift in the structure of the economically active population in the last 30 years and the changes are also visible over the last 10 years. Census data reveal that economic activity rates have been gradually declining over the intercensal periods. Crude activity rates have declined from 46% of the total

population of 10 years and over in 1981 to 42% in 2011. The trend is similar across regions, ecological belts and by sex. The rate in urban areas is lower than in rural areas, and is lower for females than males. The proportion of the employed population in the primary sector, mainly in agriculture, is gradually declining. But the proportion in the tertiary sector has increased from 6% in 1981 to 24% in 2011. Sixty per cent of the employed population reported agriculture as their main occupation. Among the employed population 27% were employees, 2% were an employer and 66% were own account workers, while 4% of the employed population reported that they had only worked for less than 3 months.

3.3 Households engaged in own account activities in the non-agricultural sector has declined from 20% in 2001 to 14% in 2011. The trend is similar in both rural and urban areas. Of households engaged in own account activities, 40 % are engaged in service activities, 42% in trade and 10% in cottage type industries.

3.4 In the last five decades, while the population has increased by nearly 3 fold, the volume of cultivated land has increased by less than two fold (from 1.6 million hectares to almost 2.5 million hectares). During this period, the average farm size has decreased from 1.1 ha to 0.7 ha per holding. The per capita production of cereals has gone up from 286 to 345 kg from 1971 to 2011. The milk and meat production per capita per year has also been gradually increasing, but the import of food has been increasing during this period indicating external dependence.

3.5 With the change in the population dynamics, social demography and the economic structure of the Nepalese population, the macroeconomic scenario of the country has also been shifting. The contribution of the agriculture sector to the GDP has declined from 61% in 1981 to 31% in 2011, while the contribution of the service sector has increased from 27% to 48% during this period. This structural transformation of the gross domestic product (GDP) from agriculture to service industries has definitely increased real per capita GDP. But, the growth rates of real GDP and GDP per capita are quite slow compared to other developing countries due to a low propensity to save, low labour productivity and low Capital Output Ratio.

3.6 Overall, the census has recorded various socio-economic indicators by spatial area and social groups. It seems that Mid West Mountain and Central Tarai have been lagging behind compared to other parts of the country, although some pockets of other parts of the country are also deprived of basic services. Therefore, in the context of the changing socio-economic and demographic picture of Nepal, a new population policy is imperative to address issues related to women, children, youth, marginalised groups and backward regions with an aim to move the country from least developed to a developing country as envisaged by the Government of Nepal.

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CHAPTER 1

ECONOMICALLY ACTIVE POPULATION: DIMENSIONS AND DYNAMICS

Dr. Rudra Suwal *
Madhav Prasad Dahal**

Abstract

The size and composition of the labour force of an economy has a significant connection with the production and consumption activities of that economy. Labour statistics of a country relate to the economic activity of the country's population. This chapter discusses concepts underlying measures of the economically active population, including the dynamics in size and composition of the population, economic activity rate, industrial and occupational distribution, and occupational involvement and educational attainment based on the periodic population censuses results, with a major focus on the National Population and Housing Census (NPHC) 2011. Employing a data-based descriptive analytical approach, this study finds that (i) there is a decrease in the activity rate of the economically active population in the census of 2011 compared to the census of 2001, (ii) females' economic activity rate is lower than that of males and the lower female activity rate in urban areas is further lower in comparison to females' activity rates of rural areas, (iii) there is a sharp decline in the number of employers between 2001 and 2011 and an increase in the number of self-employed, (iv) there is a significant increase in enrolment in school and colleges affecting the economic activity rate in the economy, and (v) agriculture is still the predominant activity that engages a large percentage of the population of the country. These findings have several policy implications some of which are contained in the conclusion part.

1.1 Conceptual considerations

A number of issues are associated with the analysis of the economically active population. Approaches to measure the labour force, the usual activity concept[1] and the definition of the term 'economically active population', and economic activities to be recorded, age and sex composition of the population, are some of the major concerns.

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1 Usual activity status is the usual relationship of a person's economic activity/work based on a long reference period as specified generally 12 months. ----------*Principles and Recommendations for Population and Housing Censuses Revision 2*; United Nations 2008.

1.1.1 Approaches to measure labour force

In the literature there are three approaches for collecting information on the economically active population (EAP). These three approaches are: gainful worker approach (GWA), labour force approach (LFA), and labour utilisation approach (LUA)/labour utilisation framework (LUF).

Gainful worker approach (GWA)

It is believed that the concept of 'gainful employment' was first used in the 1850 census of the USA, although the enumerators recorded only the occupations of males (Moen, 1988). The gainful worker approach (GWA) is the oldest approach put into practice to measure the labour force in western developed economies like the USA (Gafafer, 1937; Hauser, 1949; Webb, 1939). The GWA is based on the idea that each person has more or less a stable functional role either as a wage earner or as a housewife or student etc. and this role is independent of his/her activity at any given time (Barkat-e-Khuda, 1979). The main purpose of this approach is to count the occupation of the person. Thus persons seeking work for the first time are left out of the labour force. In this approach unemployment and underemployment are of secondary consideration, and no reference period is considered in data collection.

The only benefit of this approach is that the resulting data are not influenced by any seasonal variation, because there is no reference period or if there is one it is too long, such as a year. In fact, the predominance of seasonality in agriculture makes it practical for some of the least developed countries (LDCs) to favour the application of this approach (Barkat-e-Khuda, 1979). On the other hand, the weakness of this approach is that part of the labour force which should have been included (i.e., the 'new workers') is normally excluded from the labour supply in view of the fact that they had no 'occupation' to report. Oppositely, those persons who are working little or no longer actively employed or seeking work, such as 'retired' persons, are included. Clearly, the inclusion of 'old workers' and exclusion of 'new workers' give rise to biased estimates of the size of the labour force (*ibid*).

Labour force approach (LFA)

The labour force approach (LFA) was developed in the USA after severe unemployment during the depression period of the 1930s to correct the shortcomings of the gainful worker approach (Hauser, 1949). The mass unemployment in the 1930s created a demand for a broader listing system, and the modern concept of the labour force approach came into force after World War II (1939-1945) as a response. This framework is made operational through the International Labour Organization (ILO) and the conference of International Labour Statisticians. The LFA is an economic theory introduced to capture the supply of labour for economic goods and services. It includes both the employed and the unemployed. It specifies a minimum age and a definite time reference period. Though the LFA attempts to correct some of the shortcomings of the GWA by introducing the concepts of activity and specific time reference, its main drawback is that the data are likely to be affected by temporary and seasonal conditions at the time when the census is taken. The choice of a specific reference period and the length of the reference period are important because these are likely to affect the size of the labour force and the classification of persons therein (Barkat-e-Khuda, 1979).

Labour utilisation framework (LUF)

It is believed that the labour utilisation framework (LUF) was first proposed by Phillip M. Hauser in

1971 (Smith and Domingo, 1977). In addition to Hauser, Theresa A. Sullivan and Clifford C. Clogg contributed in the advancement of the LUF (Zhou, 2004). Due to the large number of underemployed persons in the labour force in developing countries, the LUF approach has been developed to measure the extent of underemployment. It uses the same approach as in labour force in terms of minimum age limits and the reference period but the classification of categories differ. It provides a classification of the work force into a series of functional categories within the total work force as: Adequately utilised (A) and inadequately utilised (B). The latter category, that is, category (B), includes utilised inadequately due to: (1) unemployment, (2) inadequate hours of work, (3) inadequate income, (4) mismatch between education/training and occupation. Persons who fall in to categories (2), (3) and (4) are the underemployed. They are included within employed in the labour force approach.

A key benefit of the LUF is its effectiveness in sorting out sectors of the total of the underutilised for which completely different policies might be relevant. Along these lines unemployment (B1) and underutilisation due to inadequate hours (B2) indicate a need for the creation of additional jobs, while the existence of inadequate incomes (B3) raises issues of worker productivity, labour shares vis-à-vis management and so on (Smith and Domingo, 1977). The policies recommended may possibly include increased investment in human resources, or perhaps increased capital per worker. The condition of underutilisation of labour force due to incompatibility between occupations and education (B4) points toward the issue of educational system's outputs vis-à-vis the size and character of the job market (Smith and Domingo, 1977, p.31-32).

1.1.2 ILO framework

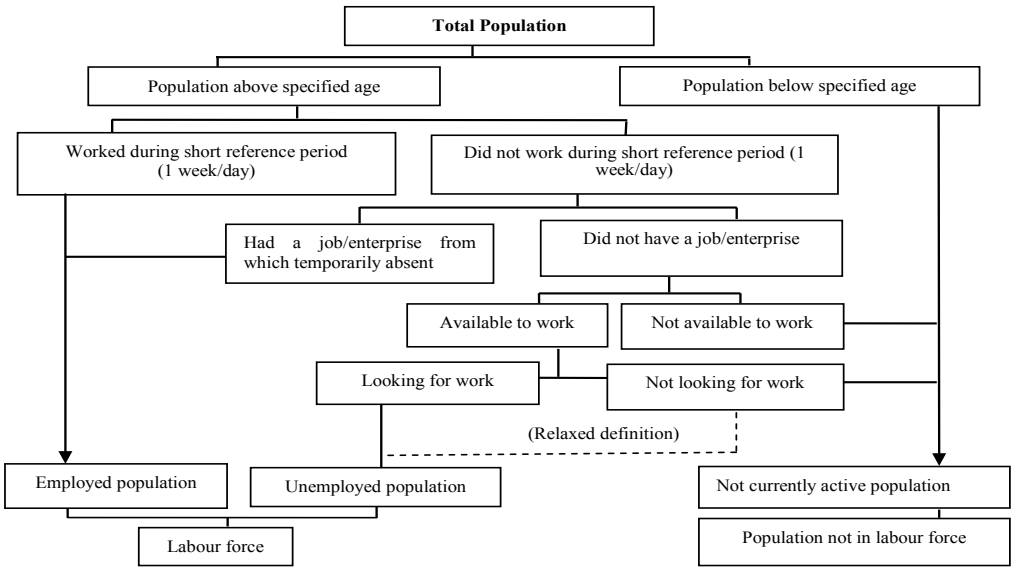
Economically active population (EAP) is a concept often used to include those who are employed along with those who are not but are willing and able to work or those who are actively looking for jobs (Lauterbach, 1977). The international criterions and guidelines for the measure of the economically active population are set out in the International Labour Organization Convention (ILOC) and the International Conference of Labour Statisticians Resolution (ICLSR). As Hussmanns, Mehran and Verma (1992) say:

> … the 'economically active population comprises all persons of either sex who furnish the supply of labour for the production of goods and services as defined by the United Nations systems of national accounts and balances, during a specified time reference period. According to these systems, the production of goods and services includes all production and processing of primary products, whether for the market, for barter or for own consumption, the production of all other goods and services for the market, in the case of households which produce such goods and services for the market, the corresponding production for own consumption (p. 11).

Obviously the economically active population (EAP) is made up of all people who, during a specified time, contribute to or are available to contribute to the production of economic goods and services as defined by the United Nations System of National Accounts (SNA). Production activities, "consists of processes or activities carried out under the control and responsibility of institutional units that use inputs of labour, capital, and goods and services to produce outputs of goods and services" (UN SNA, 1993, p.137). The EAP provides the supply of labour for economic production in an economy.

International standards, without denying other possibilities, identify two particularly useful measures of the term 'economically active population': the 'usually active population' measured in relation to a long reference period such as a year; and the 'currently active population' measured in relation to a short reference period such as one week or one day (Hussmanns, Mehran and Verma, 1992, p.11). The measurement of the EAP involves three basic issues, namely, the scope of the population to be covered; the dividing line between activities and non-economic activities; and a measurement framework for applying this dividing line to that population[2]. The International Labour Organization (ILO) has engineered a framework for measuring labour force (currently economically active population). The framework is outlined in Box 1.

Box 1: Labour Force Framework



Source: United Nations / International Labour Office. (2010). *Measuring the Economically Active in Population Censuses: A Handbook.* New York: United Nations, p.49 Figure II.This is based on R.Hussmanns, F. Mehran and V. Verma, *Surveys of the Economically Active Populations, Employment, Unemployment and Underemployment: An ILO manual on Concepts and Methods* (Geneva, International Labour Office, 1990), Figure 2.

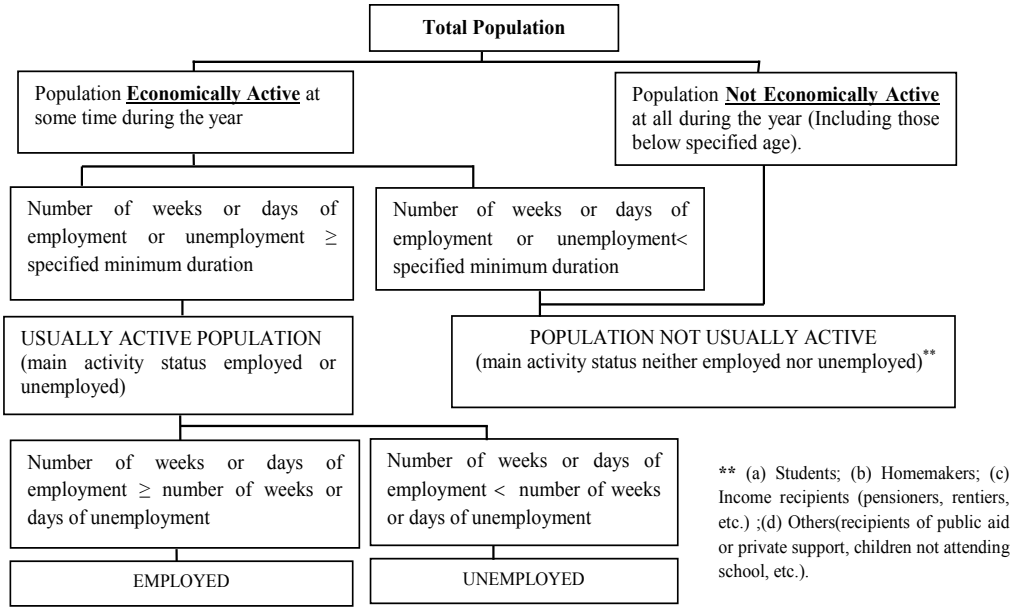
Labour force comprises all persons who, during the reference period, were either employed or unemployed. Box 1 illustrates the relationship between the total census population, the labour force (currently economically active population), the employed population, the unemployed population, and the population not in the labour force. An employed member of the economically active population (EAP) is "a person who, during the referenced period, performs any activity to produce goods or services of the type that falls within the economic production boundary defined by the SNA, or who is temporarily absent from an activity of this type" (United Nations/International Labour Office, 2010, p.48).

A one-hour criterion is often used in the number of worked hours during the reference period to take into account an individual as employed. The one-hour criteria is commonly used to ensure greater correlation between total employment and measured production as well as coverage of all types of employment, in particular irregular employment, such as standby work, causal labour, short-term work, etc. (Hussmanns, Mehran and Verma, 1992, chapter V, section, 2).

2 Hussmanns, Mehran and Verma (1992) have made more elaborate explanations on these three issues

The ILO in order to facilitate the measurement of usually active population has developed its own framework as shown in Box 2.

Box 2: ILO Framework for Measurement of the Usually Active Population



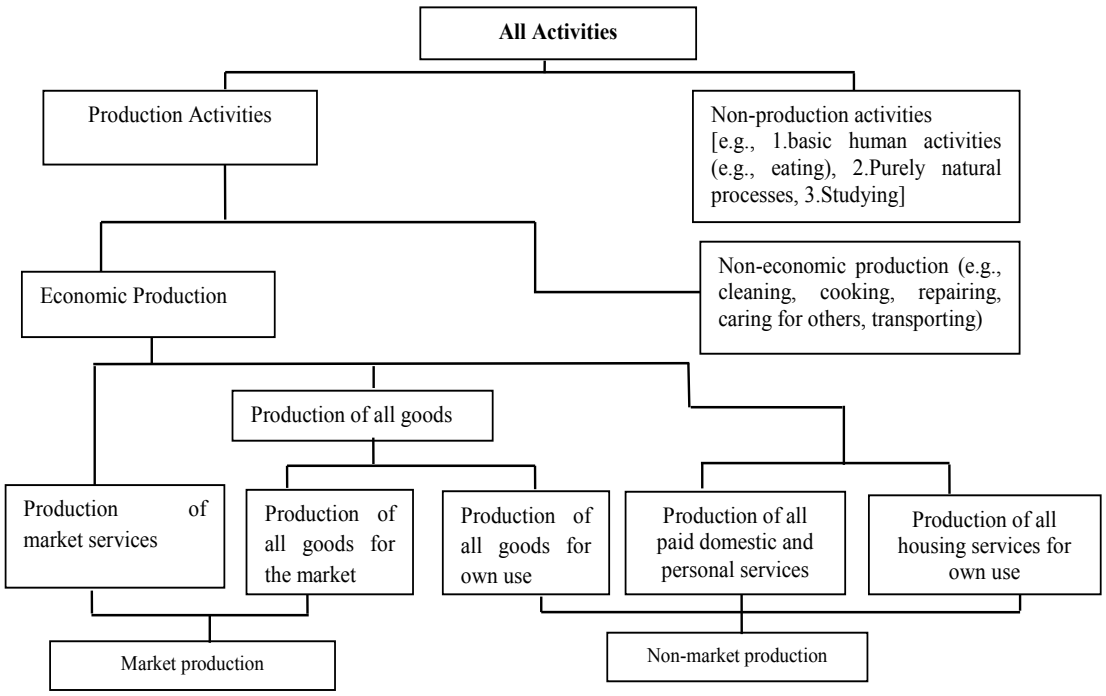
Source: ILO. Based on R.Hussmanns, F. Mehran and V. Verma, *Surveys of the Economically Active Populations, Employment, Unemployment and Underemployment: An ILO Manual on Concepts and Methods* (Geneva, International Labour Office, Second impression 1992), Figure 4, p. 52.

The concept 'population economically active at some time during the year' of the framework is broader than the concept of 'usually active population'. The former concept refers to all persons above the minimum age specified for the measurement of the economically active population who experienced at least one week (or one day) of employment or unemployment in the course of the reference year. On this norm a person economically active at some time during the reference year is then classified as 'usually active' or 'not usually active' depending on the duration of employment and unemployment during the year. The term 'duration of employment during the year' refers to the total number of weeks or days of employment experienced in the course of the year by a person economically active at some time during the year. Similarly, the term 'duration of unemployment during the year' refers to the total number of weeks or days of unemployment during the year (Hussmanns, Mehran and Verma, 1992).

1.1.3 Framework on economic activity

In order to correctly apply the definitions of employment, unemployment and economically active population in surveys of households or individuals, it is essential to have a clear understanding of the concept and boundary of economic activity. The concept of economic activity adopted by the 13th International Conference of Labour Statisticians (13th ICLS) for the measurement of the economically active population is defined in terms of production of goods and services as formulated by the United Nations System of National Accounts (SNA). Therefore only those persons who contribute or are available to contribute to the production of goods and services falling in the SNA production boundary should be counted as economically active (Hussmanns, Mehran and Verma, 1992). The framework of economic production as defined in the SNA is represented in Box 3.

Box 3: Economic production framework of Systems of National Accounts



Source: United Nations / International Labour Office. (2010). *Measuring the Economically Active in Population Censuses: A Handbook.* New York: United Nations, p.36 Figure I. This is further based on International Labour Office; based on Commission of the European Communities and others , System of National Accounts,1993(United Nations publication, Sales No.E.94.XVIII.4).

The SNA economic activity framework covers all market production and certain types of non-market production, including the production and processing of primary products by households for their own consumption, the construction of dwellings and structures for own use, and the production of fixed assets.

1.2. Dimensions of Nepal's economically active population

There are several dimensions associated with the measurement of the economically active population

(EAP) of Nepal. The general trends on the size, composition, and growth of the EAP, activity rate of the population by sex, age group, ecological and regional distribution, rural and urban distribution of the activity rate, and industrial and occupational distribution, are the major aspects that need to be analysed. The description is preceded by a brief overview of the main conceptual coverage found in the measurement.

1.2.1 Apparent conceptual features

There are a number of key conceptual aspects inherent in the measurement of the EAP of Nepal. These aspects include structure of the question asked to collect the information on economic activity over the specified reference period, approaches followed to measure the EAP, etc.

1.2.1.1 Census questions on economic activity and reference period

The Central Bureau of Statistics (CBS) framed questions in order to (a) measure the economic activity of the population, (b) classify them as economically active, not active, (c) to know the occupational and industrial involvement, and status of work, and (d) to identify reasons for not being usually active. The structure of question used in the National Population and Housing Census (NPHC) 2011 is outlined in Table 1.1 These questions[3] were asked to all persons 10 years of age and above of each household.

3 These questions in the NPHC 2011 were framed so as to make them comprehensive to measure economically active population; however we do not claim that they are exhaustive

Table 1.1: Questions asked to persons 10 years of age and above on economic activity in census 2011

What work (Name) usually did during the last 12 months?		**What work (name) usually was done?** (Occupation) (Describe the actual work done. e.g., teaching, high school teacher)	**Where did (Name) work?** (Industry) (Name the establishment or the organisation where worked. e.g., own land, paddy production)	**What was the status of employment of (Name)?**	**What was the reason for usually not working during the last 12 months by (Name)?**
		Q 22 :(1+2+3+4) >0			**Q 22:(1+2+3+4+5) < 6**
22		23	24	25	26
1. Agriculture	…months	…….	…….	1. Employer	1. Student
2. Salary/Wage	…months	…….	…….	2. Employee	2. House work
3. Own Eco. Enterprise	…months	…….	…….	3. Own Account Worker	3. Aged
4. Extended Eco.	…months	…….	…….	4. Unpaid family worker	4. Pension
5. Seeking work	…months	…….	…….		5. Physically and mentally handicapped
6. Household work	…months	…….	…….		6. Sickness or chronic illness
7. Study (Student)	…months	…….	…….		7. Others
8. No Work	…months				
Total	**12 months**				

Source: CBS. (2011). *National Population and Housing Census (NPHC) 2011.*

The questions aim to capture information on the varieties of activities performed and the reasons for remaining inactive over the reference period. In collecting information on the economic activity of the labour force of a country there is a system of following a short and a long reference period. Of course the duration of the reference period depends upon the situation and the objective of the measurement. A short reference period is of one month, one week or even of one day, whereas the long reference period may be of one year. If the short period is used the activity mostly performed over the period is referred to as 'Current Activity' and the collected data are used to measure 'labour force participation' of the population. On the other hand if a long reference period is used, the activity mostly performed during the period is termed as 'Usual Activity'. In the population censuses of Nepal there is a practice of collecting data on economic activity of the targeted population by using a long reference period of 12 months, which is generally the usual activity concept.

1.2.1.2 Conceptual elements gripped in the measurement of Nepal's EAP

A number of key features are associated with the measurement of the EAP of Nepal. A few of them are summarised in Table 1.2

Table 1.2: Main features associated with the measurement of economically active population in different censuses

	Census years						
	1952/54	**1961**	**1971**	**1981**	**1991**	**2001**	**2011**
Approach	Labour Force & Gainful work approach	Labour Force & Gainful Work Approach	Blending of Labour Force & Gainful Work Approach	Gainful Work Approach & Labour Force Approach	Gainful Work Approach & Labour Force Approach	Blending of Labour Force & Gainful Work Approach	Blending of Labour Force & Gainful Work Approach
Definition	Economically active population was one who was either working or had job but temporarily absent or looking for work at the time of census	Worked at least for 8 months either at a single stretch or at intervals, either for pay, profit or remuneration in cash or kind during the year preceding the day of census	Same as in 1961	Same as in 1961	Worked for any length of time during the 12 month preceding the census date	Worked for any length of time during the 12 months preceding the census date	Same as in 2001
Minimum Age[4]	15 years and above	15 years and above	10 years and above	10 years and above	10 years and above	10 years and above	10 years and above
Reference Period	At the time of census enumeration	8 months in the course of the year preceding the census	8 months in the course of the year preceding the census	8 months in the course of the year preceding the census	During last 12 months	During last 12 months	During last 12 months
Inclusion & Exclusion	Included all job seekers under EAP Excluded - Unpaid family worker	Excluded - Out of work at the time of enumeration - Had worked less than 8 months Included - unpaid family workers			Data on duration of work collected for the first time	Data on duration of work collected -Inclusion of extended economic activities	Data on duration of work collected -Included information on extended economic activities

Source: Information for 1952/54 until 2001 comes from the CBS (1987), Shrestha and Pant (1995) and Shrestha (2003). For census 2011 they are added by the authors from the Data Set of National Population and Housing Census 2011, CBS.

4 Since the census of 1971 till the census of 2011, ten years has been set as the minimum age in the measurement of EAP in Nepal.

The major facets summarised in Table 1.2 indicate that census data on EAP is affected by a number of limitations. The limitations come from the changes in definition and concepts used and the number and type of questions administered in the censuses (Niroula, 2003). The variation in the 'minimum age' and the 'referenced period' from one census to another has made data comparability problematic. The 2001 and 2011 censuses have widened the definition of activities to a great extent by allowing counting as economically active if they did any work at least one month during the last 12 months[5]. For the sake of defining work activities, population censuses 2001 and 2011 adopted the ILO standards, which in turn are based on the UN System of National Accounts (SNA) 1993. The economic activity framework is reproduced in Figure 3 in the earlier pages of this chapter. Census 2001 and 2011 have collected more information on the economically population. The approach of gainful work and labour force are used in the later censuses but the labour utilisation framework (LUF) innovated by Phillip M. Hauser, Theresa A. Sullivan and Clifford C. Clogg (Zhou, 2004) has not been fully practiced.

1.3. General trends of economically active population

The growth of the economically active population (EAP) is a direct effect of the growth rate of the total population of a country or of a region (Shrestha, 2003). The dynamics of total population, population of age group 10 years and above and economically active population of Nepal is presented in Table 1.3.

Table 1.3: Total and economically active population by sex, 1952/54 – 2011

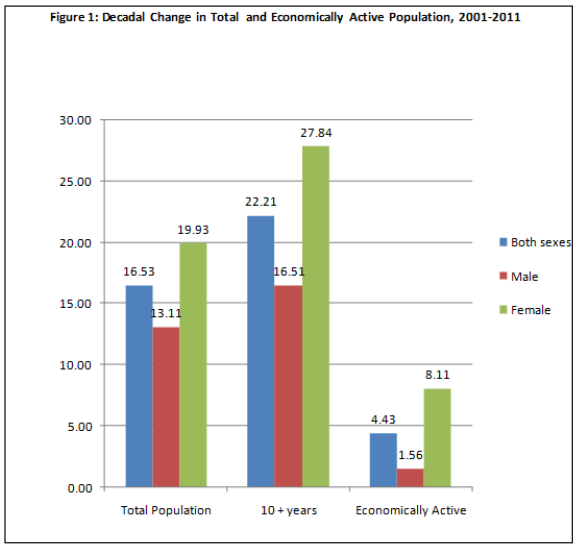
Sex & Year	Total population		Population aged 10 plus years		Economically active population	
	Number	% Increase	Number	% Increase	Number	% Increase
Both sexes						
1952/54	8235079		7225607		4153455	
1961*	9412996	14.30	5659931	-5.70	4306839	3.70
1971	11555983	22.77	8178620	44.50	4852524	12.70
1981	15022839	30.00	10517888	28.60	6850886	41.20
1991	18491097	23.09	12977612	23.40	7339586	7.10
2001	22736934	22.96	16770279	29.20	10637243	44.90
2011	26494504	16.53	20495515	22.21	11108915	4.43
Males						
1952/54	4050607		4153455		2460492	
1961*	4636033	14.40	2724757	-34.40	2563915	4.20
1971	5817203	25.50	4140624	52.00	3434288	33.90
1981	7659336	31.60	5351614	29.20	4479944	30.40
1991	9220974	20.40	6419484	20.00	4375583	-2.30
2001	11359378	23.20	8330576	29.80	5971024	36.50
2011	12849041	13.11	9706199	16.51	6064134	1.56
Females						
1952/54	4184472		3072152		1692963	
1961*	4776963	14.20	2935174	-4.50	1742924	3.00
1971	5738780	20.10	4037817	37.60	1418236	-18.60
1981	7327503	27.70	5130274	27.10	2370942	67.20
1991	9270123	26.50	6558128	27.80	2964003	25.00
2001	11377556	22.70	8439703	28.70	4666219	57.40
2011	13645463	19.93	10789316	27.84	5044781	8.11

Note: *Refers to age 15+ years as the Census 1961 defined lower limit of age 15 to qualify as economically active.

Source: Information for 1952/54 until 2001 comes from the CBS (1987), Shrestha and Pant (1995) and Shrestha (2003). For census 2011 they are added by the authors from the Data Set of National Population and Housing Census 2011, CBS.

5 Reference period of work in National Housing and Population Census 2011 is 12 months.

Figure 1: Decadal Change in Total and Economically Active Population, 2001-2011



Obviously there has been an increase in the total population, population of 10 years of age and above, and the economically active population (EAP) from one census to another. However the decennial growth of the groups of population displayed in Table 1.3 is disproportionate in each of the censuses. The growth of the population aged 10 years and above between the census of 1952/54 and 1961 is negative. Factors such as differences in data collection methods, coding, and tabulation might have contributed to produce variations in the data. Between the censuses of 1981 and 1991, there is a decrease in the number of male economically active population (MEAP) by about 2.3 percentage points. Shrestha (2003) has offered the view that a partial explanation of this result would be due to the cause of listing nearly one hundred thousand populations under the category of activity "not stated" (CBS, 1995).

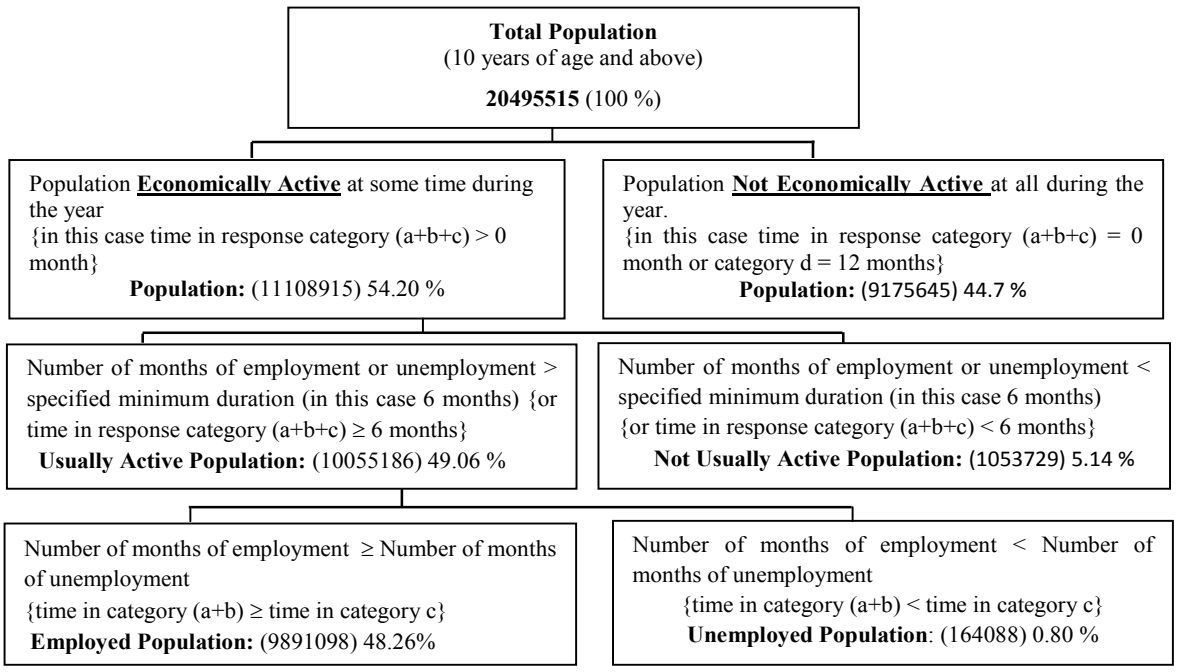
Between 1952/54 and 1961 there is a decrease in the economically active female population by 18.6% and a decrease in the female population of 10 years and above by 4.5 percentage points. Doubt has been cast over these figures due to the fact that the 1961 census probably wrongly classified a large number of females as economically active when their primary occupation was in fact as "housewives" (CBS, 1987).

A sizable increase is observed in the EAP between 1971-1981 (by 41.2%) and 1991-2001 (by 44.9%) censuses. The fast rise in the size of the EAP could be because of the broader coverage of activities and definition of the concept of the EAP brought in to the censuses. From Figure 1 it is obvious that the rate of increase in the economically active population between 2001 and 2011 is far lower (4.43%) as compared to the increase of the total population (16.53%) and the population of age 10 years and above.

As in other ILO member countries, the estimation of the EAP in Nepal is also guided by the norms set out in the ILO documents. The measure of the EAP of Nepal accomplished in the census of 2011 fitted in the ILO's framework[6] as shown in Box 4.

6 National Population and Housing Census (NPHC) 2011 report indicates the total population of age 10 years and above as 20,721,682 but the total population given in Box 4 is 20,495,515, and therefore there is a difference of 226,167. This difference is mainly due to the non-coverage of the institutional population (e.g., the population living in barracks, hostels, etc.) in Form II of Census 2011 questionnaire. Again, if the Economically Active and the Not Economically active populations given in Box 4 are added, the total is 20,284,560 and creates a difference of 210,955. The reason for this is that the population not stating their economic activity status (total 210,955) during the enumeration is not shown in the data framework given in Box 4.

Box 4: Census 2011 data fitted in the ILO framework



Note: Population number is given in parenthesis; percentages given are per cent of the total population 10 years of age and over. To simplify the presentation, response categories 1, 2, and 3 are denoted as 'a', 4 is indicated as 'b', 5 is 'c', and 6,7 and 8 are 'd' in question 22 of census 2011.
Source: CBS. (2014).NPHC 2011 Volume III,p.337.

The classification given in the ILO framework is a preliminary one. Following this standard base it is convenient to prepare other classifications like industry, occupation, status of employment of economically active population, and reasons for not being usually active for those who are not economically active by sex, age-group etc. (Niroula, 2003). Inserting the population data of the census of 2011 in the framework makes it possible to compute rates of conventional measurement, for instance economically active, not economically active, employed, unemployed, etc.

1.4 Size of EAP's components

The core components of EAP are *employed, unemployed* and *not economically active* population. The characteristics of the employed population are measured through their various jobs, including their occupation, industry, status in employment, institutional sector, working conditions (such as employment income, working time, job security and safety, training, participation in decision making), as well as employment in the informal sector and informal employment (African Development Bank, 2012). The characteristics of the unemployed population include duration of unemployment, job search methods, access to social benefits, and the characteristics of the previous-jobs they may have had (*ibid*). The main characteristics associated to those not being economically active include their reasons for not being active and the extent of their labour market attachment and features of former jobs they may have had. The components of the economically active population corresponding to the census of 2011 are given in Table 1.4.

Table 1.4: Economically active and not active population 10 years of age and over by sex, 2011

	Category	Number	As % of 10 yrs.& Above
A.	Usually Active		
1.	Employed	**9891098**	48.26
	Male	5627787	
	Female	4263311	
2.	Unemployed	**164088**	0.80**
	Male	121024	
	Female	43064	
B.	Not Usually Active	**1053729**	5.14
	Male	315323	
	Female	738406	
	Economically Active (A1+A2+B)	**11108915**	54.20
	Male	6064134	29.59
	Female	5044781	24.61
C.	Economically not Active	**9175645**	44.77
	Male	3542892	17.29
	Female	5632753	27.48
D.	Economic Activity Not Stated	**210955**	1.03
	Male	99173	0.48
	Female	111782	0.55
Total Population 10 Yrs. & Above (A1+A2+B+C+D)		**20495515**	100.00

Note: **The unemployment percent is calculated out of the total of 10 years and above population (20495515).

Source: CBS. (2014). *NPHC 2011 Volume III, p.337*

In the NPHC 2011, EAP is defined as the population of ten years of age and over who remained economically active (in agriculture activities, wage/salary earnings, own non-agricultural business activities, extended economic activities and seeking jobs) at some time during the reference period (i.e., during the period of 12 months preceding the day of census enumeration). On the basis of this definition 11,108,915(or 54.20%) of the population of ten years and above are economically active whereas 91,756,459 (or 44.77%) are economically not active. There are differences in the economically active male and female population. Among the total male population aged 10 years and above (9,706,199), 62.48% (6,064,134) are economically active and 46.76% (5,044,781) of females out of a total of 10,789,316 of the same age category are economically active.

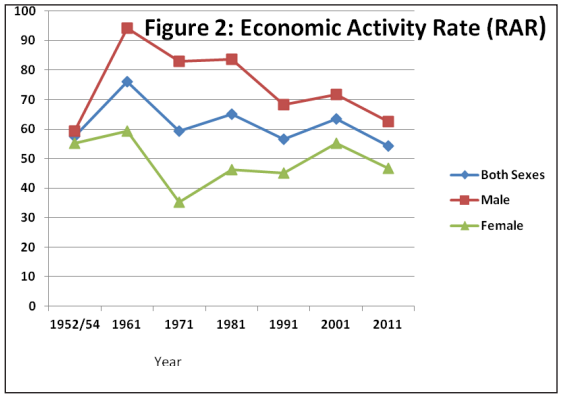
1.5 Activity rate of the population

One of the major constituents in the analysis of the EAP is the activity rate, also known as labour force participation rate (LFPR). Literature primarily discusses two types of activity rate of the EAP, namely, the crude activity rate (CAR) and the refined activity rate (RAR). The CAR is the percentage of labour force (economically active population) in the total population and the RAR is the percentage of the labour force (economically active population) in the total population of 10 years of age and above; the RAR is generally considered as the labour force participation rate (LFPR). This figure is a measure of the degree of success of the economy in engaging the population in some form of production activity. It is an indicator that also reflects demographic trends of a region and of a country. Rates for males and females are the proportions that are classified economically active. The data relating to crude and refined activity rates are given in Table 1.5. For comparison purposes with previous population censuses of Nepal, both the CAR and RAR are computed.

Table 1.5 : Crude and refined activity rate by sex, 1952/54 – 2011

Census Year	Crude Activity Rate (CAR)			Refined Activity Rate (RAR)		
	Both Sexes	Male	Female	Both Sexes	Male	Female
1952/54	50.43	60.74	40.45	57.48	59.23	55.1
1961	45.75	55.3	36.48	76.09	94.09	59.38
1971	41.99	59.03	24.71	59.33	82.94	35.12
1981	45.6	58.48	32.36	65.14	83.71	46.21
1991	39.69	47.45	31.97	56.56	68.16	45.2
2001	46.78	52.56	41.01	63.43	71.68	55.29
2011	41.93	47.20	36.97	54.20	62.48	46.76

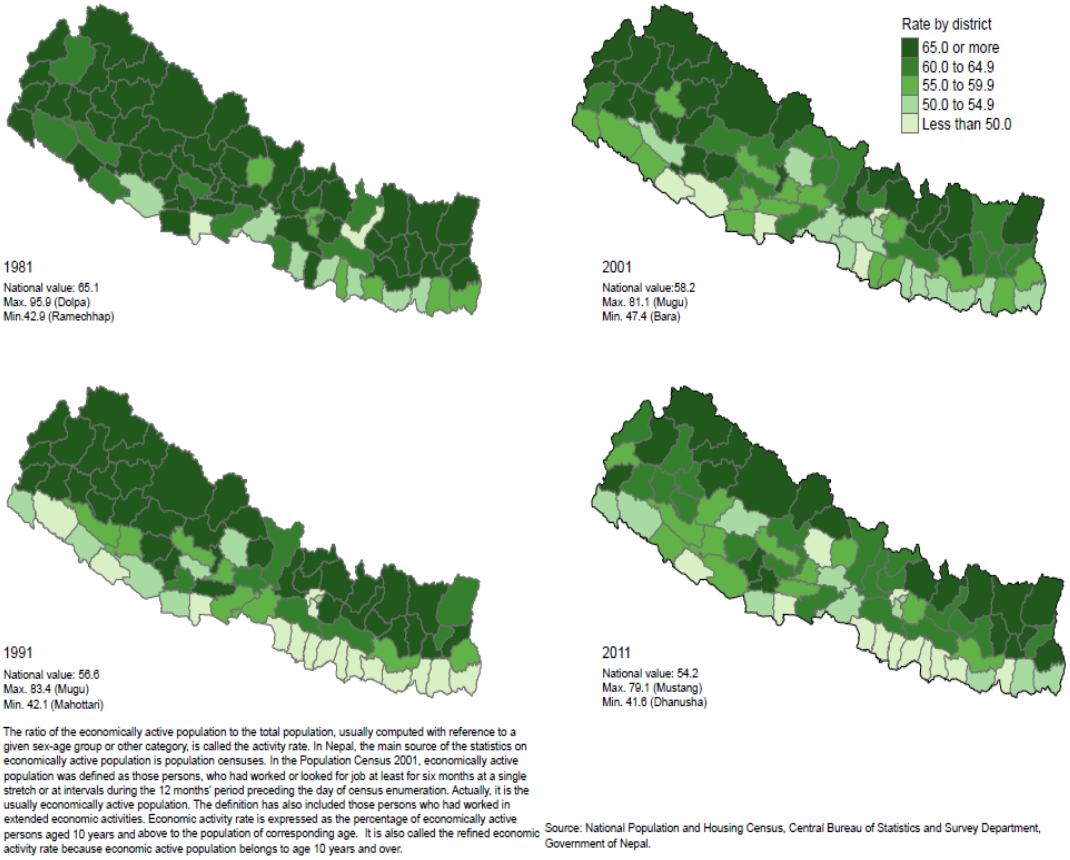
Source: Information for 1952/54 until 2001 comes from the CBS (1987), Shrestha and Pant (1995) and Shrestha (2003). For the year 2011 they are computed by the authors from the Data Set of National Population and Housing Census 2011, CBS.



When used for the analysis of trends, CARs are influenced by changes in the structure by age, mostly changes in the younger and older populations, which are economically inactive. For example, a growth in the fraction of the population over 64 years will reduce the economic activity rate, and also conceal actual changes in activity. The same is true for increases or decreases in the population of younger ages. Both of these age groups (the older and younger) affect the rate of economic activity. This applies to both the male and female population. If the older and younger age groups are not considered, the result is that the indicator that is presumed to measure economic activity may actually be measuring increases or decreases in the inactive population.

The RAR controls for variations in these factors as it considers the proportion of the age group 10 years or 15 years of age and over (e.g., 10-64 or 15-64). In view of the fact that the refined rate excludes the mass of the non-economically active population (namely the younger and the older), these rates should be higher than crude rates (for both male and female). The CAR and RAR of the economically active population of Nepal are of a fluctuating nature (Figure 2) and there is not a sustained rise in the activity rate in the census of 2011; both the CAR and RAR have declined when compared to the census of 2001.

Map 1: Economic activity rate by districts



The ratio of the economically active population to the total population, usually computed with reference to a given sex-age group or other category, is called the activity rate. In Nepal, the main source of the statistics on economically active population is population censuses. In the Population Census 2001, economically active population was defined as those persons, who had worked or looked for job at least for six months at a single stretch or at intervals during the 12 months' period preceding the day of census enumeration. Actually, it is the usually economically active population. The definition has also included those persons who had worked in extended economic activities. Economic activity rate is expressed as the percentage of economically active persons aged 10 years and above to the population of corresponding age. It is also called the refined economic activity rate because economic active population belongs to age 10 years and over.

Source: National Population and Housing Census, Central Bureau of Statistics and Survey Department, Government of Nepal.

The distribution of economic activity rate by different geographical locations/districts is found to have changed remarkably over the census years, 1981 to 2011(Map 1). One of the main reasons for the decline in the activity rate is the increase in enrolment rates in school and higher-level education in Nepal. In the census of 2001, altogether 37,99,356 persons (21,51,064 males and 16,48,293 females) of 10 years above were reported not being economically active due to study, and in the census of 2011, the number went up to 60,38,845 (30,95,610 males and 29,43,235 females) with an increase of 58.94% over the period. Another explanation for the decrease in the activity rate is the increasing outflow of working age Nepalese population to foreign countries as migrant workers.

1.5.1 Age and sex-specific activity rate

The economic activity rate of the economically active population is likely to differ by their age and sex. The minimum age limit in the definition of labour force varies among countries. Generally the activity rate of the population of younger and older age tends to be lower than that of the middle age population. Moreover, education and child labour policy of the government also have an influence on labour force participation rate (Shrestha, 2003). For example, if basic level education (education up to eighth grade) or secondary level education (education up to tenth grade) is made compulsory up to a particular minimum age and child labour is restricted by the government, then 10-14 years age-specific participation rate would indeed be lower. The age and gender-specific participation rate of the economically active population is represented in Table 1.6.

Table 1.6: Age and sex- specific economic activity rate, 1971-2011

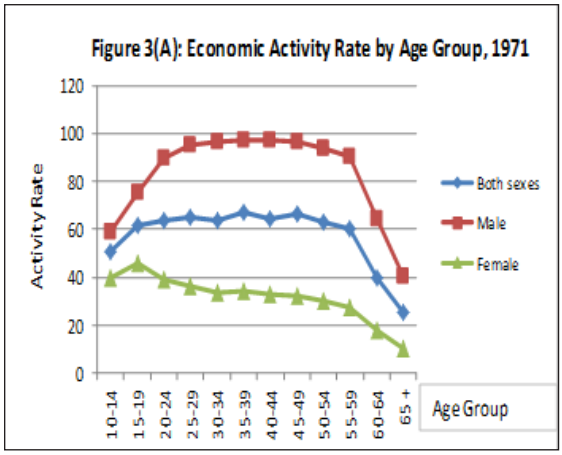
	1971			1981			1991			2001			2011		
Age group	B.Sex	Ml.	Fm.	B.Sex	Ml.	Fm.	B.Sex	Ml.	Fm.	B.Sex	Ml.	Fm.	B.Sex	Ml.	Fm.
10-14	50.5	59.2	40.1	56.9	61.3	51.9	23.28	18.44	28.54	28.83	27.34	30.42	8.14	8.44	7.84
15-19	61.6	75.7	46.2	60.7	69.2	51.3	49.43	49.57	49.29	48.92	49.70	36.61	26.80	28.83	24.84
20-24	63.5	89.8	39.2	66.1	86.3	47.6	66.35	80.52	54.31	68.75	76.90	54.14	56.00	62.81	50.80
25-29	65.3	95.1	36.6	68.7	93.4	44.9	72.34	92.77	54.13	78.17	91.94	72.80	72.78	87.02	62.27
30-34	63.7	96.6	33.9	68.2	95.3	43.3	73.92	95.61	54.03	81.84	96.60	77.80	78.04	93.99	65.69
35-39	66.9	97.4	34.0	70.8	95.8	44.1	75.63	96.33	54.73	83.27	97.36	78.51	81.20	95.95	68.75
40-44	64.7	97.2	32.9	70.4	96	44.7	74.55	95.93	54.3	83.39	97.12	83.42	82.59	96.23	70.27
45-49	66.7	96.8	32.5	72.3	96.4	44.9	74.13	95.12	52.31	83.29	96.75	84.39	82.47	95.98	69.52
50-54	62.9	94.0	30.5	71.2	94.3	44.7	70.73	92.07	48.17	80.82	94.65	93.72	81.08	94.22	67.79
55-59	60	90.3	27.7	69.9	92.2	43.3	66.85	88.56	41.69	77.89	91.56	69.29	77.26	91.29	62.97
60-64	39.7	64.1	17.9	62.5	83.3	39.9	45.96	66.47	25.5	67.23	81.91	77.77	67.34	82.60	52.87
65 +	25.1	40.5	10.4	52.9	68.7	35	26.92	40.27	12.92	47.12	59.71	34.3	58.74	74.51	42.91

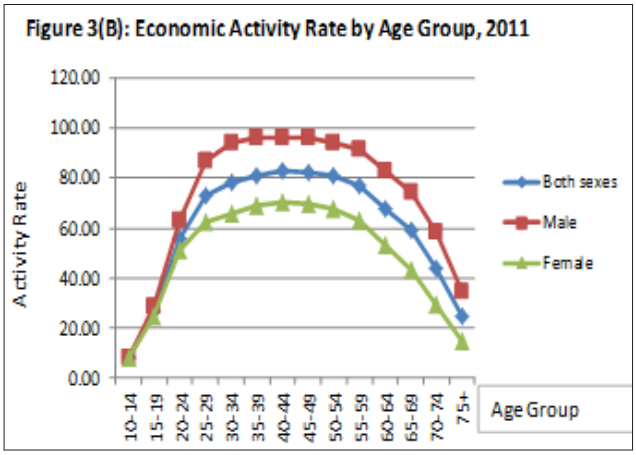
Note: B.sex=Both sexes; Ml.=Male, Fm.=Female

Source: Information for 1971 until 2001 comes from the CBS (1987), Shrestha and Pant (1995) and Shrestha (2003). For the year 2011 they are computed by the authors from the Data Set of National Population and Housing Census 2011, CBS.

The activity participation rates presented in Table 1.6 reveal that over a period of 40 years (1971-2011) the participation rate of the population of age group 10-14 years has declined considerably. In the 1971 census it was as high as 50.5%, which declined to 8.14% (a reduction of almost six fold) in the census of 2011. The same trend applies to the male and female population

The declining activity rate of the population of age group 10-14 years over the period 1971-2011 may be taken as an indication of the falling trend of child labour in Nepal. The activity rate of the population of the age group 15-19 and 20-24 years also shows a decreasing tendency over the period of 1971-2011. When compared, the participation rate of the age group of 15-19 years and 20-24 years is higher than that of the age group 10-14 years of the population irrespective of gender. It has been already mentioned that the increase in enrolment in school and university education of the economically active age-group population and the increasing outflow of Nepalese as migrant workers could be the main explanations for the decline in the activity rate. The overall activity rate shows an increasing trend from the age group of 25-29 to 50-54 years; it shows a decreasing trend from the population of the age group 55-59 years. Thus the economically active population's activity rate shows a universal inverted U-curve trend [Figure 3(A) and 3(B)]. Comparing the male/female activity rate, the data reveals the dominance of male activity rate over the female activity; there has been an apparent fall in the activity rate of females in the latest census.





For the NHPC 2011 data the activity rate for the economically active population of 15+ years is also computed as shown in Table 1.7.

Table 1.7: Activity rate for age group of 15+ years, census 2011

Category			
Age group	Male	Female	Total (Both sexes)
10-14 Years	8.44	7.84	8.14
15+ Years	74.31	54.05	63.51

Source: Computed by authors from the data set and reports of NPHC 2011, CBS.

In the population of age category 15+ years, the female activity rate is lower than the male activity rate. For the year 2011, if the RAR figures given in Table 1.7 are compared with the RAR figures of Table 1.5, it is obvious that the overall RAR computed by taking the economically active population of 15+ years exceeds the RAR computed by taking the economically active population of 10+ years.

1.5.2 Activity rate by sex and rural-urban perspective

The economic activity rate of the population varies by place of residence. Gender-specific activity rate for urban and rural areas are presented in Table 1.8.

Table 1.8: Economic activity rate by sex and place of residence, 1971 – 2011

	Rural			Urban		
	Crude Activity Rate (CAR)					
Census Year	Both Sexes	Male	Female	Both Sexes	Male	Female
1971	60.10	83.70	36.00	42.30	66.8	12.30
1981	45.99	58.46	32.98	39.77	54.69	22.58
1991	40.94	48.15	33.84	30.56	44.76	15.19
2001	47.69	52.67	42.77	41.27	51.89	29.97
2011	43.17	47.54	39.14	35.90	45.62	25.80
Refined Activity Rate (RAR)						
1971	60.07	83.69	36.02	48.20	75.88	11.40
1981	65.85	83.77	47.19	54.90	74.86	31.48
1991	58.76	69.78	48.10	40.76	59.44	20.34
2001	65.43	72.80	58.25	52.28	65.69	37.99
2011	56.32	63.51	49.98	44.43	57.98	31.08

Source: Information for 1971 until 2001 comes from the CBS (1987), Shrestha and Pant (1995) and Shrestha (2003). For the year 2011 they are computed by the authors from the Data Set of National Population and Housing Census 2011, CBS

Data given in Table 1.8 indicate differentials in the rural-urban CAR and RAR in totality and gender-specific terms. Both CAR and RAR are higher in rural than in urban areas. One of the partial explanations for this may be that people living in rural areas are more or less involved in some sort of own-account economic activities than people of urban areas. It may also be that school-attending children of rural areas also work relatively more than their counterparts in urban areas[7]. The data reveal that the rural-urban differential in the activity rate is slowly getting narrower. There is a decline in the activity rates of males and females between the censuses of 2001 and 2011 in both rural and urban areas. However the decline in female activity rate is much more striking. This indicates low-involvement of females in "economic work". In comparison to rural areas, the activity rate of females in urban area is substantially lower in the latest census. In totality the activity rate of the urban area (both CAR and RAR) has remained lower than that of the rural area.

To understand the activity rates more precisely, it is meaningful to have an overview of the distribution of the population on the basis of age and sex composition as well as place of residence. This information is shown in Table 1.9.

7 Refer to Report on the Nepal Force Survey 1898/99 Table 12.2, p.66 and Report on the Nepal Force Survey 2008 Table 13.1, p.135.Central Bureau of Statistics, National Planning Commission Secretariat, Government of Nepal.

Table 1.9: Age-sex specific activity rates by place of residence, 2001-2011

Age Group	2001						2011					
	Rural			Urban			Rural			Urban		
	Both Sex	Male	Female	Both Sex	Male	Female	Both Sex	Male	Female	Both Sex	Male	Female
10-14	30.54	28.84	32.34	17.42	17.31	17.53	8.68	8.62	8.75	2.68	3.17	2.15
15-19	52.04	52.43	51.68	31.81	35.65	27.61	28.56	29.49	27.68	14.70	18.77	10.24
20-24	72.35	80.13	65.69	52.1	63.33	40.53	65.15	77.63	56.13	37.41	46.53	28.91
25-29	80.54	93.20	69.30	67.01	86.36	47.42	78.32	94.16	67.04	59.70	79.41	43.04
30-34	83.60	97.00	71.18	73.32	94.79	50.15	80.23	94.01	69.98	68.75	91.63	48.22
35-39	84.92	97.67	72.52	74.73	95.81	52.01	80.37	89.31	73.06	71.80	94.35	50.26
40-44	84.94	97.53	72.85	74.78	95.05	51.61	79.80	85.82	74.58	72.70	94.27	49.83
45-49	84.90	97.22	72.38	73.57	94.11	49.83	76.43	79.00	74.02	70.72	93.12	46.90
50-54	73.22	95.64	69.76	68.97	89.31	46.05	72.64	72.77	72.52	66.96	89.30	42.69
55-59	91.55	92.7	65.40	63.68	83.12	40.54	67.15	66.84	67.47	59.82	81.33	36.96
60-64	69.52	83.64	55.15	50.42	69.04	31.91	58.26	59.98	56.64	47.50	66.24	29.27
65 +	49.33	61.61	36.62	31.92	45.77	19.28	46.08	45.83	46.34	39.02	56.90	21.88

Note: B.Sex=Both sexes; Ml. =Male, Fm.=Female.
Source: Data relating to Census 2001 are from Shrestha (2003). Figures relating to 2011 are derived by authors from the reports of the National Population and Housing Census 2011, CBS.

The rural-urban based male-female specific age group distribution of the activity rate also exhibits a similar pattern to the economic activity rate considered in the overall category. The general participation rate of both sexes of age group 10-14 years has declined considerably in both rural and urban areas. For both sexes of this age group the activity rate in rural areas was as high as 30.54% in the 2001 census, which declined to 8.68% (a decline of almost four fold) in the census of 2011. The same trend applies to the male and female population of age group 10-14 years of rural and urban areas. The activity rate of the population of the age group 15-19 and 20-24 years also shows a decreasing tendency over the period of 2001 to 2011. However when compared to the participation rate of the age group of 10-14 years of population, the participation rate of the age-groups 15-19 and 20-24 years is relatively higher irrespective of gender. The growing number of enrolments in school and university level education of Nepal and the increasing outflow of Nepalese migrant workers are the main causes of the decrease in the activity rate of the economically active age-group population.

The rural urban distribution of the activity rate shows an increasing trend from the age group 25-29 to 45-49 years; it shows a decreasing trend from the population age group 50-54 years. Thus the economically active population's activity rate disaggregated into rural-urban setting by age group and sex also shows a universal inverted U-curve trend. Comparing the male female activity rate, the data reveals the dominance of male activity rate over the female activity rate. It may be that the female population is much more involved in household activities that are not counted in the economic activities.

1.5.3 Activity rate by sex for ecological zones

On the basis of environmental conditions, especially climate, landforms, and soil characteristics, Nepal is divided into three ecological zones, Mountain, Hill and Tarai. The crude and refined activity rates by sex for ecological zones of Nepal are presented in Table 1.10.

Table 1.10: Crude and refined activity rates by sex for ecological zones, 1971-2011

Census Year and Sex	Crude Activity Rate (CAR)			Refined Activity Rate (RAR)		
	Mountain	Hill	Tarai	Mountain	Hill	Tarai
1971						
Total	50.75	44.81	35.75	69.99	62.89	51.32
Male	62.43	58.43	58.97	85.51	81.99	83.33
Female	38.98	30.86	14.97	54.13	44.16	16.09
1981						
Total	54.45	53.33	36.91	75.66	68.78	58.80
Male	61.83	61.45	54.50	85.91	82.03	83.80
Female	46.72	44.54	18.94	64.93	55.41	31.34
1991						
Total	52.63	44.37	33.78	74.49	62.78	48.56
Male	52.62	47.02	47.85	74.92	67.54	68.87
Female	52.64	41.85	19.18	74.08	58.38	27.53
2001						
Total	79.37	65.87	59.00	76.47	62.41	53.54
Male	79.88	70.16	71.92	76.89	66.49	66.76
Female	78.88	61.84	45.61	76.06	58.59	39.84
2011						
Total	50.81	45.36	25.44	67.48	57.21	49.86
Male	50.45	47.78	47.76	68.02	61.56	62.54
Female	51.14	43.18	14.81	66.99	53.47	38.03

Source: Information for 1971 until 2001 comes from the CBS (1987), Shrestha and Pant (1995) and Shrestha (2003). For the year 2011 they are computed by the authors from the Data Set of National Population and Housing Census 2011, CBS.

Obviously there is a substantial difference in both the CAR and RAR in the three ecological zones of Nepal; both activity rates exhibit ups and downs from one census to another. In the census of 2011 the activity rates have declined in comparison to previous censuses. The explanation for this tendency is the same as mentioned earlier (i.e., increasing enrolment in school and university education, and an outflow of a large number of Nepalese migrant workers). The data reveal that among the three ecological zones Mountain has the highest CAR and RAR, Tarai has the lowest and Hill is in between in each of the censuses. Activity rates differentials in the ecological zones exhibit a widening trend over time.

There is a persistence of sex differences in activity rates in the three ecological zones. There is a narrow gap in the activity rates of males and females in the Mountain region but the gap in male-female activity rates is wide in the Hill and Tarai regions. Both the CAR and RAR of females is lowest in the Tarai region. The explanation for this may be that the female population is more confined within household work that is non-economic production in the economic activity framework outlined in the UN System of National Accounts.

1.5.4 Activity rate by sex for development regions

For administrative ease and formulation and implementation of developmental plans considering the local potential and needs, Nepal is divided into five development regions, namely, Eastern Development Region (EDR), Central Development Region (CDR), Western Development Region (WDR), Mid-western Development Region (MWDR), and Far-western Development Region (FWDR). The refined activity rates in the five administrative development regions by sex are presented in Table 1.11.

Table 1.11: Crude and refined activity rates by sex for ecological zones, 1971-2011

Year and Sex	Development Regions				
1981	**EDR**	**CDR**	**WDR**	**MWDR**	**FWDR**
Both Sexes	63.22	61.73	66.72	71.9	70.45
Male	81.14	83.02	81.27	87.5	87.64
Female	44.13	38.79	51.4	55.78	52.88
1991					
Both Sexes	55.28	53.55	57.62	62.44	65.62
Male	68.09	69.83	64.19	72.13	70.81
Female	42.55	36.78	51.75	52.72	60.76
2001					
Both Sexes	63.64	59.47	64.03	67.58	71.59
Male	72.41	71.54	68.65	74.05	73.64
Female	54.98	46.76	59.91	61.20	69.61
2011					
Both Sexes	56.84	50.22	55.98	57.54	57.92
Male	65.10	62.53	60.63	62.22	59.88
Female	49.53	38.19	52.19	53.45	56.25

Source: Information for 1981 until 2001 come from the CBS (1987), Shrestha and Pant (1995) and Shrestha (2003). For the year 2011 they are computed by the authors from the Data Set of National Population and Housing Census 2011, CBS.

There are marginal differences in the refined activity rates of the EAP among the five development regions. The activity rate does not show a sustained rise; it declined in the census of 1991 relative to the 1981 census, slightly increased in the census of 2001 and again declined in 2011. The reasons for the decline in the activity rate in the latest census are again the increased enrolment in school and colleges, and the growing outflow of Nepal's working age population as migrant workers. There are marked differences in the activity rates between males and females among the five development regions. Female activity rates are comparatively lower than that of males in all the development regions.

1.6 Distribution of usually employed population by type of industries

Generally the census in Nepal has the practice of gathering information on industrial involvement (industrial division) of the population based on the question: "Where did you work during the last 12 months? Name the establishment or the organisation where you worked?" The distribution of employed population by type of industries is presented in Table 1.12.

Table 1.12: Percentage distribution of economically active population by type of major industries and sex, 1971-2011

Major Industry	Census and Sex														
	1971			1981			1991			2001			2011		
	Both Sexes	Male	Female	Both Sexes	Female	Male	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
A	94.35	92.81	98.17	91.15	95.75	88.71	81.23	74.93	90.53	65.7	60.25	72.83	64.01	54.49	76.61
B	-	0.00	0.00	-	0.01	0.02	0.03	0.04	0.02	0.16	0.18	0.13	0.26	0.33	0.17
C	1.07	1.32	0.46	0.50	0.21	0.63	2.04	2.64	1.16	8.81	8.15	9.67	5.63	7.17	3.59
D	0.04	0.05	0.00	0.04	0.01	0.06	0.16	0.25	0.03	1.49	0.59	2.68	0.25	0.39	0.07
E	0.10	0.14	0.01	0.02	0.01	0.04	0.49	0.73	0.13	2.89	4.20	1.19	3.38	5.32	0.82
F	1.32	1.62	0.55	1.60	0.69	2.10	3.49	4.47	2.04	9.94	10.72	8.94	7.01	8.47	5.08
G	0.21	0.27	0.02	0.11	0.01	0.16	0.69	1.12	0.07	1.63	2.78	0.14	3.97	5.80	1.56
H	0.06	0.10	0.01	0.14	0.04	0.20	0.28	0.41	0.09	0.00	1.17	0.25	1.86	2.50	1.01
I	2.84	3.69	0.78	4.58	1.92	5.98	10.25	13.58	5.32	6.70	9.63	2.88	11.06	12.30	9.41
J	-	0.00	0.00	-	0.00	0.00	0.38	0.60	0.06	1.65	2.09	1.07	0.13	0.15	0.09
K	-	0.00	0.00	1.86	1.35	2.13	0.96	1.23	0.55	0.22	0.23	0.22	2.44	3.09	1.59

Note: A= Agriculture, Forestry & Fishing; B= Mining & Quarrying; C= Manufacturing; D= Electricity, Gas & water; E= Construction; F= Commerce; G= Transport & Communication; H= Finance & Business Services; I= Personal & Community Services; J= Others; K= Industry not stated. The industrial involvement of the population of the census of 2011 is merged into these broad sectors for ease in comparison.

Source: Information for 1971 until 2001 come from the CBS (1987), Shrestha and Pant (1995) and Shrestha (2003). For the year 2011 they are computed by the authors from the Data Set of National Population and Housing Census 2011, CBS.

From the data given in Table 1.12 it is obvious that a significant percentage of the EAP is engaged in the agricultural sector, although the involvement rate is a decreasing trend. The decrease in the activity rate in agriculture was substantial between the censuses of 1971-1981, 1981-1991, and 1991-2001 but it remained marginal between the censuses of 2001-2011(65.70% in 2001 and 64.01% in 2011). In the census of 1971, about 94.35% of EAP were involved in agricultural activities while in the census of 2011, the involvement in agricultural activities declined to 64.01%. The decrease in the involvement of EAP in the agriculture sector suggests the shifting of involvement in other industrial activities of the economy of Nepal. The figures show that there is a greater participation by the female population in the agriculture sector than that of males.

After agriculture (A), activities of Manufacturing (C), Commerce (F), and Personal and Community Services (I) engage the employed population of the country. It is apparent that the pace of other industrial sectors to engage the economically active population of the country is slow in Nepal. Kaldor (1967) and Kuznets (1971) hypothesize that a shift away from agriculture towards manufacturing, other types of industrial production, and services is one of the stylised scenarios of economic development. Such a change in the productive structure will generally be associated with changes in the structure of employment. Labour tends to move out of agriculture into industrial activities and services.

International Standard Industrial Classification (ISIC) categorises all the industrial activities into three broad sectors: Primary, Secondary, and Tertiary.[8] Primary sector comprises of agriculture, fishing, mining and quarrying. Secondary sector includes construction industry, manufacturing, electricity, gas and water. Tertiary sector is the entire service sector comprising of wholesale and retail traders, hotel and restaurant, transportation and communication, financial intermediary, real estate and business service, public administration and defence, health and other social services. The percentage distribution of EAP by major industrial sectors and sex for rural and urban areas of Nepal is presented in Table 1.13.

8 Even if there is a revision in the classification of economic activities from the ISIC Rev.4 (2008), the old practice for comparison of the Census 2011 data with the data of previous censuses has been followed.

Table 1.13: Percentage distribution of the employed population by major industrial sectors and sex for rural and urban areas, 1971-2011

		Major sectors		
Region and Sex	Year	Primary	Secondary	Tertiary
Nepal	1971	94.37	1.17	4.45
Both Sexes	1981	91.15	0.53	6.47
	1991	81.23	2.56	14.87
	2001	65.70	11.86	22.21
	2011	64.27	9.27	24.02
Male	1971	92.81	1.46	5.73
	1981	88.71	0.68	8.48
	1991	74.93	3.41	19.83
	2001	60.25	12.53	26.99
	2011	54.82	12.88	29.21
Female	1971	98.17	0.46	1.36
	1981	95.75	0.22	2.68
	1991	90.53	1.31	7.55
	2001	72.83	10.99	15.96
	2011	76.78	4.48	17.15
Rural	1971	96.26	0.84	2.89
Both Sexes	1981	92.74	0.33	5.14
	1991	85.54	1.90	11.4
	2001	72.25	10.17	17.37
	2011	71.80	7.83	18.25
Male	1971	95.21	1.03	3.75
	1981	90.82	0.42	6.72
	1991	80.37	2.62	15.39
	2001	68.61	10.4	20.78
	2011	63.14	11.41	22.68
Female	1971	98.75	0.38	0.86
	1981	96.3	0.16	2.20
	1991	92.69	0.87	5.81
	2001	76.7	9.89	13.19
	2011	82.47	3.43	12.78
Urban	1971	32.83	12.03	55.13

(Table continues...)

(Table 1.13 continued...)

		Major sectors		
Both Sexes	1981	63.96	3.81	29.09
	1991	24.07	11.40	60.86
	2001	42.18	17.95	39.6
	2011	22.20	17.28	56.30
	1971	29.53	12.78	57.68
Male	1981	57.00	4.54	34.74
	1991	19.67	11.42	64.90
	2001	33.7	19.29	46.70
	2011	16.37	19.71	59.40
	1971	54.81	7.02	38.16
Female	1981	83.39	1.75	13.33
	1991	30.12	11.43	47.96
	2001	56.2	15.73	27.87
	2011	33.89	12.40	50.08

Source: Derived and computed by authors from the reports of the Population Censuses of Nepal, 1971 - 2011, CBS.

The percentage distribution of EAP by major industrial sectors and sex for rural and urban areas given in Table 1.13 reveals that a significant proportion of the EAP of Nepal is involved in the primary sector, which is predominately agriculture. However the involvement in agriculture sector is a decreasing trend. The contribution of the tertiary sector (the service sector) in totality is a rising trend and the pace of rise of the involvement of the EAP in the service sector is higher in urban areas than in rural areas. Although the involvement of male and female EAP in the tertiary sector activities is an increasing trend; the involvement of the male EAP is higher than the female on the whole and on a rural-urban basis.

In the later censuses the speed of involvement of the EAP in the secondary sector activities is also an increasing trend when compared to the situation in 1971 or 1981, although it is slow. The slow growth of the manufacturing sector indicates more dependence of the EAP in the primary (agriculture) sector in the economy of Nepal. Figures relating to rural-urban areas indicate that the involvement of the EAP in the secondary industrial sector is larger in urban areas, which is natural because manufacturing production activities are urban-centric due to the availability of physical infrastructures like transportation, power supply, and industrial security. The involvement of female EAP in the secondary sector is smaller in comparison to male EAP both in the rural and urban environment. The lower rate of the involvement of the female EAP in the secondary and tertiary sector's l activities again indicates greater involvement of female EAP in the primary sector (agriculture sector) activities in the economy of Nepal.

1.7 Occupational involvement of usually employed population

The 'usually active' population component of the EAP includes "all persons above a specified age whose activity status, as determined in terms of the total number of weeks or days during a long specified period (such as the preceding 12 months or the preceding calendar year) was employed

and/or unemployed as defined within the labour force framework" (United Nations/International Labour Office, 2010, p.76). The information on the occupation of the population is collected based on the question, "What do you usually do? Describe the usual work done". The occupational group is formed considering the International Standard Classification of Occupation (ISCO). The occupational involvement of the usually active population on the whole and for males and females is given in Table 1.14(a) and 1.14(b). The occupational classification of the population of the census of 2011 is presented in a separate table (Table 1.14(b) because some of the occupations are not compatible to types of occupations of earlier censuses.

Table 1.14(a): Percentage distribution of employed population by sex and major occupation in Nepal, 1971 – 2001

Major Occupational Groups	Census Year											
	1971			1981			1991			2001		
	B.Sex	Ml	Fm	B.Sex	Ml	Fm	B.Sex	Ml	Fm	B.Sex	Ml	Fm
Professional & Technical	0.52	0.68	0.14	0.93	1.19	0.45	1.78	2.54	0.66	4.18	5.93	1.90
Administrative & Related	0.02	0.03	0.03	0.09	0.13	0.02	0.3	0.15	0.07	0.57	0.87	0.18
Clerical	0.97	1.13	0.13	0.71	1.03	0.12	1.06	1.60	0.26	2.03	3.13	0.60
Sales	1.24	1.54	0.51	1.25	1.62	0.53	2.98	3.87	1.66	7.89	10.5	4.49
Services	0.70	0.84	0.38	0.24	0.31	0.10	6.18	7.77	3.84	9.26	9.06	9.53
Agriculture	94.37	92.8	98.17	91.37	88.89	96.06	81.1	74.75	90.46	59.61	53.4	67.74
Production	2.18	2.80	0.67	3.12	3.86	1.73	4.23	5.76	1.96	1.43	2.19	0.43
Others#	-	-	-	-	-	-	2.09	2.96	0.82	14.95	14.9	15.03
Not Stated	-	-	-	1.73	2.28	0.99	0.28	0.31	0.25	0.08	0.07	0.10

Note: # Refers to "Elementary Occupation" group in Table 28 of National Report of the Population Census 2001. For simplicity of comparison with the previous censuses it has been termed as "others" category.

Source: Derived and computed by authors from the data set and reports of the Population Censuses of Nepal, 1971 - 2001, CBS.

The data presented in Table 1.14(a) highlights that agricultural occupation are a dominant source of providing work to the usually economically active population of Nepal although the share of this type of profession in the total EAP has continued to decline in each of the censuses succeeding the census of 1971. On a gender-specific basis, the occupational involvement of females in the agriculture sector is higher than male's involvement. Service providing activities are also employment varieties of the population of Nepal.

The population census of 2011 also highlights that agriculture is the dominant source of employment opportunity to the EAP of Nepal. When compared to the data of 2001, occupational involvement of the employed population in the agriculture sector reported in the 2011 population census has slightly increased. The occupational involvement of the female population in the agriculture sector is obviously higher than the male population as revealed by the population censuses of 1971 until 2011 even though female's occupational dependency on agriculture is also a declining trend.

Table 1.14(b): Percentage distribution of employed population by sex and major occupation in Nepal, 2011

Major Occupational Groups	Both Sexes	Male	Female
Armed forces	0.24	0.39	0.04
Managers	1.41	1.64	1.11
Professionals	3.99	4.64	3.14
Technicians and associate professional	2.09	2.84	1.09
Office assistance	1.27	1.58	0.87
Service & sale workers	8.29	10.13	5.87
Agriculture, forestry & fishery workers	60.43	50.50	73.57
Craft and related trades workers	8.07	11.32	3.77
Plant & machine operators & assemblers	2.22	3.61	0.37
Elementary occupations	9.94	10.85	8.75
Not stated	2.03	2.49	1.42

Source: Computed and derived by authors from the data set and reports of National Population and Housing Census 2011, CBS.

It also makes sense to overview the occupational structure of the usually active population of specified age and over. The figures relating to the population census of 2011 on the occupational distribution of usually active population for the rural and urban area by sex are presented in Table 1.15.

Table 1.15: Percentage distribution of employed population 10 years of age and over by occupation and sex for place of residence, 2011

	Nepal			Urban			Rural		
Occupation	**Both Sexes**	**Male**	**Female**	**Both Sexes**	**Male**	**Female**	**Both Sexes**	**Male**	**Female**
Armed forces	0.24	0.39	0.04	0.63	0.88	0.13	0.17	0.29	0.03
Managers	1.41	1.64	1.11	4.55	4.74	4.15	0.85	0.97	0.71
Professionals	3.99	4.64	3.14	8.86	8.47	9.63	3.12	3.81	2.27
Technicians and associate professional	2.09	2.84	1.09	6.66	7.53	4.91	1.27	1.82	0.59
Office assistance	1.27	1.58	0.87	3.55	3.37	3.90	0.87	1.19	0.47
Service & sale workers	8.29	10.13	5.87	22.05	23.46	19.23	5.83	7.24	4.09
Agriculture, forestry & fishery workers	60.43	50.50	73.57	20.13	14.58	31.29	67.64	58.28	79.18
Craft and related trades workers	8.07	11.32	3.77	15.48	17.83	10.76	6.74	9.91	2.84
Plant & machine operators & assemblers	2.22	3.61	0.37	4.82	6.72	1.00	1.75	2.94	0.28
Elementary occupations	9.94	10.85	8.75	9.73	8.70	11.81	9.98	11.31	8.34
Not stated	2.03	2.49	1.42	3.55	3.73	3.19	1.76	2.22	1.19
Total*	100	100	100	100	100	100	100	100	100

Note: *Because of rounding figures after the decimal may not add up to 100.
Source: Computed by authors from the data set of National Population and Housing Census 2011, CBS

The rural-urban-specific occupational distribution for the usually active population indicates that agriculture is by far the largest sector providing jobs to the Nepalese people. Except for agriculture, the share of male in job-occupancy is higher than that of female. Involvement of usually employed population in elementary occupation is also considerable in the aggregate and rural-urban context. Elementary occupations involve the performance of simple and routine tasks that may require the use of hand-held tools and abundant physical effort (ILO, 2012, p.337). The occupancy of service and sale workers in the total jobs is also encouraging and it is followed by craft and related trade workers, and professional.

The ecological distribution of usually active population by occupation is presented in Table1.16.

Table 1.16: Usually employed population 10 years of age and over by occupation* 2011 (in percentage)

Occupations	Mountain	Hill	Tarai
Armed forces	0.07	0.34	0.17
Managers	1.03	1.86	1.03
Professionals	3.50	4.89	3.18
Technicians and associate professional	1.15	2.57	1.76
Office assistance	0.98	1.61	0.99
Service & sale workers	3.94	8.82	8.51
Agriculture, forestry & fishery workers	79.85	62.23	55.34
Craft and related trades workers	3.95	8.23	8.61
Plant & machine operators & assemblers	0.58	2.14	2.57
Elementary occupations	4.16	5.71	15.17
Not stated	0.79	1.59	2.68
Total* **	**100**	**100**	**100**

Note: *includes both sexes; ***Because of rounding figures after the decimal may not add up to 100.
Source: Computed by authors from the data set of National Population and Housing Census 2011, CBS.

The data reveal that obviously agriculture is the major sector providing jobs to a large segment of the people living in the Mountain, Hill and Tarai regions of Nepal. The dependency on agricultural jobs is the highest in the Mountain and lowest in the Tarai. This is because more industries are established in the Tarai region and economic activities other than agriculture are quite meagre in the Mountain region. The proportion of craft and related trade workers is almost equal in the Hill and Tarai regions (around 8%). Other considerable areas of EAP's job involvement are service and sale workers, professionals and elementary occupations.

The distribution of usually economically active population by major occupations for development regions as per the census of 2011 is presented in Table 1.17.

Table 1.17: Percentage distribution of employed population by major occupation for development regions, 2011

	Development Regions				
Major Occupations	**EDR**	**CDR**	**WDR**	**MWDR**	**FWDR**
Armed forces	0.16	0.42	0.14	0.13	0.16
Managers	1.09	2.06	1.32	0.97	0.64
Professionals	3.47	4.81	3.92	3.33	3.33
Technicians and associate professional	1.70	3.19	1.52	1.32	1.20
Office assistance	0.88	1.87	1.00	1.01	0.97
Service & sale workers	7.39	11.08	7.58	5.89	5.11
Agriculture, forestry & fishery workers	62.05	48.94	64.96	71.18	74.37
Craft and related trades workers	6.65	10.53	8.04	6.38	4.92
Plant & machine operators & assemblers	2.10	3.11	2.11	1.13	0.97
Elementary occupations	12.24	11.19	7.98	7.61	7.07
Not stated	2.27	2.80	1.41	1.05	1.27
Total*	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

*Note:**Because of rounding figures after the decimal may not add up to 100.
Source: Computed by the authors from the data set of Population and Housing Census 2011, CBS

On the basis of regional administrative development regions too, agriculture sector emerges as the main sector of jobs for the Nepalese people. However the proportion of the population involved in the agriculture sector is different in the five development regions; the lowest percentage involvement is in the central development region (CDR). On average the involvement in agriculture, forestry and fishery workers in the agriculture-related activities is largest (74.37%) in the far western development region (FWDR). After agriculture, elementary occupation appears as an important employment of Nepalese people. Service and sale workers, and craft and related trades workers are other types of employment. The status of professionals is little bit higher in the central development region (CDR).

1.8 Educational attainment of usually employed population

The close association between educational attainment and employment opportunity is a widely established norm. Generally the higher an individual's educational attainment, the more likely the person will be in the labour force. Educational attainment of the labour force also reflects the skill levels of the labour force. The larger the proportion of the labour force with a secondary and tertiary (university) education, the higher the skill levels of the labour force. Many different occupations require a certain level of formal education in order for a person to be eligible in that profession. Several empirical studies (e.g., Gemmell, 1996; Petrakis and Stamatakis, 2002; Pereira and Aubyn, 2009; Zhang and Zhuang**,** 2011) have documented that primary and secondary level education contribute in final goods production activities of countries and regions that are at lower levels of development, and higher (tertiary) level education is contributive in technological inventions in advanced economies. Therefore it is interesting to present an overview of the percentage distribution of occupational involvement of the employed labour force of Nepal with different levels of education attainment. This is shown in Table 1.18 in which the data relates to the population census of 2011.

Table 1.18: Percentage distribution of occupational involvement and level of education passed, Nepal, 2011

	Occupations									
EduLv	**Occp1**	**Occp2**	**Occp3**	**Occp4**	**Occp5**	**Occp6**	**Occp7**	**Occp8**	**Occp9**	**Occp10**
Edu1	0.05	0.20	0.04	0.15	0.20	0.32	0.54	0.39	0.22	0.44
Edu2	0.07	0.39	0.16	0.25	0.45	0.47	1.13	0.83	0.50	1.22
Edu3	0.94	1.53	0.35	0.64	1.45	1.93	4.67	4.20	2.81	5.08
Edu4	0.90	2.03	0.29	0.89	2.03	2.86	6.81	6.18	4.61	7.39
Edu5	1.84	2.48	0.45	1.20	2.29	3.65	7.46	7.73	6.63	9.16
Edu6	5.09	6.47	1.12	3.09	7.00	9.33	16.20	16.64	14.63	17.19
Edu7	1.58	2.19	0.33	1.17	2.06	3.41	5.92	6.23	6.45	7.02
Edu8	3.61	3.95	0.66	1.99	3.79	5.80	8.03	8.48	9.49	8.48
Edu9	11.61	7.17	1.44	4.27	7.98	9.60	9.90	11.10	13.81	9.94
Edu10	6.52	4.26	0.98	2.65	4.38	5.97	5.64	5.50	6.87	5.26
Edu11	13.21	7.75	3.81	7.34	10.08	11.55	8.11	7.87	9.71	6.75
Edu12	26.14	15.87	20.40	21.47	18.71	19.92	9.33	10.45	12.52	8.72
Edu13	13.71	15.08	30.91	24.53	17.26	12.48	3.14	4.65	4.47	3.74
Edu14	8.54	15.19	24.07	18.99	12.79	5.84	0.77	1.76	1.63	1.41
Edu15	3.67	10.47	13.16	8.61	5.26	1.21	0.13	0.45	0.43	0.41
Edu16	0.04	0.32	0.55	0.30	0.12	0.03	0.01	0.01	0.02	0.02
Edu17	0.00	0.06	0.13	0.15	0.10	0.09	0.11	0.10	0.12	0.13
Edu18	2.26	4.19	0.89	2.01	3.75	5.14	11.41	6.93	4.69	7.03
Edu19	0.20	0.39	0.26	0.30	0.29	0.41	0.68	0.51	0.37	0.63
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Note: Occp=Occupations; Occp1=Armed forces; Occp2=Managers; Occp3=Professionals; Occp4=Skilled technicians and associate professionals; Occp5=Clerical support workers; Occp6 = Service and sales workers; Occp7=Agricultural, forestry and fishery workers; Occp8=Crafts and related trade workers; Occp9 =Plant and machine operators and assemblers; Occp10 = Elementary occupation.

EduLv=Education levels; Edu1=Nursery/K.G./Kindergarten; Edu2=Class I; Edu3=Class II ; Edu4=Class III ; Edu5=Class IV ; Edu6=Class V ; Edu7=Class VI ; Edu8=Class VII ; Edu9=Class VIII ; Edu10=Class IX ; Edu11=Class X ; Edu12=SLC or Equivalent ; Edu13=Intermediate or Equivalent ; Edu14 =Bachelor or Equivalent ; Edu15=Masters or Equivalent ; Edu16=PhD or Equivalent ; Edu17=Other ; Edu18= Non-formal education ; Edu19 = Not stated

Source: Computed by authors from the data set and report of National Population and Housing Census 2011, CBS.

The data indicate that the population with lower levels of formal education is involved in more-manual natured jobs (blue-collar jobs) and the population with higher levels of education is involved in higher-level managerial and professional jobs (white-collar-jobs). The share of population with education equivalent to tenth grade and SLC or equivalent is sizeable in different jobs, which is followed by jobs involvement with higher secondary (10+2) and bachelor level of education. The labour force with non-formal education also occupies a significant space in the job market. Therefore it is concluded that basic and secondary education in particular holds more significance in the education-based job classification in Nepal.

1.9 Employment status

Employment status is the legal position and classification of someone in employment as either an employer or employee or working on their own account (self-employed). The classification may be further disaggregated into large employers, small employers, the self-employed without any employees, unpaid family workers contributing labour to a family farm or business, partners in a legally defined partnership, apprentices and supervisors, as well as ordinary employees. The Central Bureau of Statistics (CBS) collects information on the status of employment based on the question: "What was your employment status?" with response options of employer, employee, own-account worker, and unpaid family worker. The status of usually employed population for the census years 2001 and 2011 is shown in Table 1.19.

Table 1.19: Percentage distribution of employed population (aged 10 + years) by employment status and sex, 1971-2011

Census Year	Sex	Employees	Employers	Own Account Workers	Unpaid Family Worker	Unspecified
1971	Both Sexes	9.34	0.45	85.82	4.29	-
	Male	11.69	0.55	84.66	3.10	-
	Female	3.65	0.21	88.98	7.16	-
1981	Both Sexes	9.07	0.69	85.54	2.52	2.18
	Male	11.84	0.86	83.21	1.73	2.36
	Female	3.85	0.36	89.95	4.02	1.82
1991	Both Sexes	21.41	0.56	75.25	2.34	0.44
	Male	27.81	0.70	69.53	1.53	0.43
	Female	11.96	0.36	83.69	3.53	0.45
2001	Both Sexes	24.63	3.80	62.73	8.83	-
	Male	33.72	3.85	56.69	5.73	-
	Female	12.75	3.73	70.63	12.88	-
2011	Both Sexes	27.47	2.15	65.82	1.33	3.24
	Male	35.73	2.59	57.63	0.84	3.20
	Female	16.53	1.56	76.66	1.97	3.29

Source: The figures for 1971, 1981, 1991 and 2011 come from CBS (1987), Shrestha and Pant (1995), and Shrestha (2003). For the year 2011 figures are computed by authors from the data set and reports of the Population and Housing Census 2011, CBS.

The percentage distribution of employment status of the employed labour force of Nepal shows the dominance of own account workers, more than 65% on aggregate as per the population census of 2011; it was 85.82% in the population census of 1971. The proportion of employers up until the census of 1991 was not even 1%. In the population census of 2011, the proportion of employers has increased to about 2.15% in the total. The proportion of employees has slightly increased in the census of 2011 compared to previous censuses.

A comparative view of the level of employment status of usually economically active population 10 years of age and above for the population censuses of 2001 and 2011 is shown in Table 1.20.

Table 1.20: Employment status of usually economically active population 10 years of age and above, Nepal 2001 and 2011

Census Year and Sex	Total	Employer	Employee	Self Employed*	Unpaid family Worker	Not Stated
2001	9900196	376349	2438328	6210841	874678	
Male	5606774	216311	1890586	3178384	321492	
Female	4293422	160038	547742	3032457	553186	
2011	9929562	213303	2727231	6535825	131578	321626
Male	5656027	146701	2020979	3259829	47534	180984
Female	4273535	66602	706251	3275996	84044	140642

Note: * Own account worker in Census 2011

Sources: CBS (2002).Population Census 2001, National Report, and, CBS (2014).National Population and Housing Census 2011, Volume 03(Tables from Form-II), 2014.

In between the period of 2001 and 2011, there is decrease in the number of employers (job creators) in the economy from a total of 376,349 in 2001 to 213,303 in 2011, a net decrease of 163,046 employers (a decrease of 43.32%). On the other hand there is an increase in the number of employees in the same period; in the 2001 census the number of employees was 2,438,328, which increased to 2,727,231 in the 2011 census, an increase of 288,903 individuals (or 11.85%). The drop in the number of employers over the period 2001 to 2011 seems to be confirmed by the reduced proportion of employers given in Table 19 for the referred period. The internal conflict of 1996-2006 and the political instability following it would be factors creating unfavourable industrial climates in the country and reducing the number of employers. Among the number of employees, the number of males exceeds females in the censuses of 2001 and 2011. This indicates that female entrepreneurship is low in Nepal.

There is an increase in the self-employed nature of jobs between 2001 and 2011. In 2001 the number of self-employed was 6,210,841, which increased to 6,535,825 in the 2011 census, a net increase of 5.23 percentage points over a period of one decade. This implies that waged and salary employment is lacking in Nepal, and self-employment is becoming a key source of jobs. A body of theoretical literature suggests that self-employment and economic development are related inversely. Lucas (1978) predicts that entrepreneurship decreases with economic development. Recent studies, however, conjecture a U-shaped relationship between economic development and entrepreneurship (Wennekers and Thurik, 1999; Wennekers, Stel, Thurik and Reynolds, 2005). The latest empirical studies support the view that the per-capita Gross National Product (GNP) is negatively related to self-employment rates (Acs, Audretsch and Evans, 1994; Folster, 2002). Iyigun and Owen (1999) show that an economy develops as individuals invest time in accumulating professional skills through education rather than by accumulating entrepreneurial human capital. These issues are yet to be empirically verified in the context of Nepal.

The presence of 'unpaid family worker' is notable although it has declined between 2001 and 2011. Among the unpaid family workers the number of females far exceeds males. This suggests that females are much more limited in within-household activities.

1.10 Duration of work of the employed population

Duration of work of the employed population is one of the major indicators of labour statistics of a country. This reflects the time of labour utilisation in the economy. It is reported that the Central Bureau of Statistics (CBS) for the first time started to gather information on duration of work of the economically active population over the one-year reference period in the population census of 1991 (Shrestha and Pant, 1995). In the censuses, CBS classified the duration of work into four broad categories as presented in Table 1.21. The duration of work is estimated from "Q22" of the NPHC 2011.

Table 1.21: Percentage distribution of economically active population (10+ years) by duration of work in the 12 months preceding the census by sex, 1991- 2011

Duration of Work						
Year and Sex		< 3 months	3-5 months	6 -7 months	8 + months	Number
1991	Both Sexes	2.25	6.01	26.26	65.04	7339586
	Male	1.86	5.02	24.43	68.19	4375583
	Female	2.82	7.47	28.95	60.38	2964003
2001	Both Sexes	5.03	6.72	4.50	83.75	9900196
	Male	3.68	5.04	3.62	87.66	5606774
	Female	6.8	8.91	5.62	78.66	4293422
2011	Both Sexes	4.09	5.41	11.07	79.43	11154384
	Male	2.90	2.30	4.16	90.64	6064134
	Female	5.50	9.12	19.31	66.07	5090250

Source: Computed and derived by authors by using the data set and reports of Population Censuses of Nepal, 1991 - 2011, CBS.

Workers' longer working duration in months (more than 8 months) increased in 2001 compared to 1991, but in 2011 it declined slightly relative to the year 2001, considering both sexes together. It is encouraging that a large majority (around 79 %) of the economically active population worked more than 8 months during the reference year of the census of 2011, although it is lower than 2001. In 2011 the percentage of males working a longer time (8 months and above) increased to 90% although the percentage of employed female population declined to 66% against 78.66% in the census of 2001. It deserves to be noted that a sizeable percentage of the employed population in the censuses of 1991, 2001 and 2011 worked less than 3 months and 3 to 5 months of the reference period. This indicates the prevalence of partial unemployment in the economy of Nepal. For those groups of population it would be difficult to meet the cost of livelihood of the whole year.

1.11 Unemployment comparison

Unemployment is a worldwide phenomenon and all economies of the world experience some form and degree of unemployment of their labour force. Unemployment is an economic condition where an individual or individuals seeking jobs cannot succeed to get economically employed. The unemployment rates of Nepal estimated by the population censuses, the Nepal Labour Force Survey (NLFS), and the Nepal Living Standards Survey (NLSS) are shown in Table 1.22.

Table 1.22: Comparison of unemployment rate by sources of estimates

Census/Survey	Unemployment Rate*		
	Total	Male	Female
2001 Census	8.1	7.0	9.2
NLFS 1998/99	5.2	4.1	6.3
NLSS 1996	4.9	5.6	4.1
NLFS 2008	2.1	2.2	2.0
NLSS 2010	2.2	3.2	1.5
2011 Census	1.48	2.00	.85

*Number of unemployed persons per 100 economically active populations.
Source: CBS, Population Census 2001 and 2011; CBS NLFS 1998/99 and 2008; CBS NLSS 1996, 2004 and 2010.

Data given in Table 1.22 reveal that Nepal is not in a state of full employment of its labour force and the extent of unemployment differs from sources of estimates. As census and sample survey data are different, certain differences in the employment and unemployment figures arise. There is a difference in the unemployment of the male and female population. If the unemployment figures are taken considering the EAP estimated in the census of 2011, it is 1.48%.

The level of unemployment differs with economic conditions and labour market forces. An economy experiences structural unemployment which occurs due to the mismatch between available workers' skill and education and occupational vacancies in the labour market, difficulty in moving to a new location, difficulty in learning a new skill, and the introduction of new techniques and technologies that need less labour force. Economies also go through frictional unemployment that results from temporary transitions made by workers and employers or from workers and employers having differing or incomplete information. Sometimes economies are hit by classical unemployment which occurs due to above-market minimum wages set by labour acts and when trade unions and labour organisations bargain for higher wages, which leads to strikes and lockouts and results in the fall in the demand for labour. Furthermore, there is demand deficient unemployment, which results from the decrease in aggregate demand for goods and services leading to a decrease in the demand for labour (Sherraden, 1985). Beyond all of these unemployments, economies also experience seasonal unemployment that occurs due to the seasonal nature of jobs; for example, hospitality and tourism industries, fruit picking and catering industries are affected by seasonal unemployment (Mourdoukoutas, 1988).

One or more of the aforementioned unemployment is definitely prevalent in Nepal. The problem of unemployment in Nepal is also from the supply-side related factors; there is a shortage of investment in physical overhead capital building (roads, electricity, irrigation facility) that constrains industrial establishment and ultimately leads to labour unemployment. Additionally the occurrence of disguised unemployment in Nepal cannot be ignored.

1.12 Reasons for being economically inactive

Population censuses and labour force surveys collect information from respondents on their reasons for inactiveness based on a number of criteria. The criteria of wanting a job, being available to start, and seeking work are based on the ILO definition of unemployment. Those people, who are classified as unemployed, by definition, meet all three conditions. Thus the economically inactive population are those people who do not satisfy all the criteria for ILO unemployment, that is, inactivity is a result of not satisfying one, two or all three of these criteria. A bulk of the working age population may be economically inactive due to different reasons. In the 2001 population census of Nepal about 8,034,164 people (3,213,311 male and 4,820,854 female) were recorded as economically inactive which increased to 10,229,373 (3,858,214 male and 6,371,159 female) in the 2011 population census. The percentage distribution of economically inactive population of 10 years and above by reasons for being inactive is given in Table 1.23.

Table 1.23: Percentage distribution of economically inactive population (10+ years) by reasons for being inactive by sex, 1981- 2011

Reasons for being inactive									
Census year and Sex		**Study**	**Household Chores**	**Aged**	**Physically & Mentally Handicapped**	**Pension & Income Recipient**	**Sick**	**Others**	**Unspecified**
1981	Total	22.15	61.82	7.52	1.53	--------	----	3.43	3.56
	Male	65.12	0.73	12.71	3.62	--------	-----	10.87	6.95
	Female	8.01	81.91	5.81	0.84	-------	-----	0.98	2.45
1991	Total	36.29	47.03	10.44	1.32	-------	---	3.50	1.41
	Male	65.84	12.00	11.77	1.97	-------	-----	6.75	1.67
	Female	19.68	66.72	9.70	0.96	------	-----	1.68	1.26
2001	Total	47.30	33.10	7.39	2.49	2.66	2.84	2.41	1.80
	Male	66.94	9.24	7.11	3.15	3.83	3.41	3.16	3.13
	Female	34.19	49.00	7.58	2.05	1.88	2.46	1.92	0.91
2011	Total	59.03	28.85	6.17	1.04	0.91	1.18	1.24	1.58
	Male	80.23	4.89	6.49	2.03	1.39	1.47	1.90	1.59
	Female	46.20	43.35	5.97	0.44	0.62	1.01	0.84	1.57

Source: The figures for 1981, 1991, and 2001 are from CBS (1987), Shrestha and Pant (1995) and Shrestha (2003). For the year 2011 they are computed and derived by the authors from the data set and reports of the Population Censuses of Nepal, 1981- 2011, CBS.

Among the reasons for being economically inactive "study" emerges as the foremost cause. This segment has been steadily rising over time and has more than doubled from 22.15% in 1981 to 59.03% in 2011. The consistent increase in the study component is characterised by an obvious rise in the percentage of females. During the period of 1981-2011, the proportion of the female population stating

"study" as the reason for remaining economically inactive almost increased by six-fold (from 8.01% in 1981 to 46.20% in 2011) but the proportion of males rose to 80.23% in 2011 from 65.12% in 1981. This implies the changing awareness of parents about the importance of female education in the country (Shrestha, 2003).

The increase in the proportion of the population stating "study" has led to the decline in the proportion of people stating "household chores" (tasks such as cleaning, washing, and ironing that have to be done regularly at home) as the causes for remaining economically inactive. The proportion of household chores has declined from 61.82% in 1981 to 28.85% in 2011, and the decline is more appreciable for females.

Obviously "age factor" appears as the third main reason for economic inactivity. In the population census of 1981 about 8% of males and females together stated that they were inactive because of old age. In the population census of 1991 this proportion climbed to 10.44% , which declined to 7.39% in the census of 2001 and further dropped to 6.17% in the census of 2011. The other less common reasons for economic inactivity were "sickness, physically and mentally handicapped" and "pension and income recipient". As regard to the percentage of the pension and income recipient in the censuses of 2001 and 2011, the proportion declined in the 2011 census.

1.13 Conclusion

There is no disagreement that the information on the total population in general and economically active population in particular is very important from several perspectives for the development of a nation. Keeping a record of the population and hence of the labour force in Nepal formally began in the 1952/54 census. By the 2011 census the characterisation of reporting the labour force has evolved considerably. In the latter censuses emphasis is placed on the description and categorisation of occupations, reporting of the duration of employment of the economically active population, and job involvement according to level of education attained, etc.

The major findings of the analysis of this chapter are as follows. First, there is decrease in the activity rate of the economically active population in the census of 2011 compared to the census of 2001.This is characterised by the lower female activity rate in urban areas in comparison to females' activity rates in rural areas. Secondly, there is sharp decline in the number of employers between 2001 and 2011 and an increase in the number of self-employed. Thirdly, there is a significant increase in enrolment in school and colleges affecting the activity rate as the population of 10 years and above involved in studies are counted in the not-economically active population. Fourthly, as regard to the occupation, according to passed level of education, the larger percentage of the population has education of tenth grade, SLC or equivalent, and intermediate level in the economy. Finally, agriculture is still the predominant activity that engages a large percentage of the population of the country.

The findings have some policy implication. Firstly, in the latest census there is a decrease in economic activity rates of the EAP, and the increase in enrolment in schools and colleges partially accounts for this. The increase in school and college enrolment is highly desirable because education has both individual and social benefits. By the time of the next population census a large percentage of the currently studying mass will enter into the Nepalese job market requiring more employment opportunities. The Nation should plan for accommodating this portion of the potential labour force into economic activities. Second, the low and declining activity rate of the female population is not a good indication for a gender-balanced and inclusive growth and development of the country. There is further

need for policies and programmes and their implementation to mobilise females' involvement and enhance their economic activity in the country. Third, in the latest census the number of entrepreneurs (employers) has declined by about 43% (between 2001 and 2011) and there is a considerable increase in the number of self-employed. If this trend continues it will be difficult to achieve a higher economic growth rate and upgrade the country from a least developed to a developing one within the stipulated time frame. Increased industrial activities and growing labour employment in the organised sector support the achievement of high economic growth. Finally, the continued dominance of the agricultural activities suggests the slow pace of non-agricultural economic activities to employ the growing labour force of the country.

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CHAPTER 2

OWN ACCOUNT ECONOMIC ACTIVITIES OF NEPALESE HOUSEHOLDS

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Abstract

The objective of this chapter is to analyse data on own account activities of households that was collected under listing schedule approximately a month before main census operation of the census 2011. Own account activities of the non-agriculture sector were listed basically with a purpose to provide sampling frame for the further study. Percentage of households engaged in own account non-agriculture activities was found declined from 20.0 percent in 2001 to 14.02 percent in 2011. The decline is more in rural area where the percentage went down from 30.65 percent in 2001 to 15.32 percent in 2011. The size of the households and percentage engaged in own account non-agriculture activities seem to have positive relation. Bigger the size of households, higher is the chance of being engaged in own account activities. Similarly, most own account activities were reported to be in the service sector followed by business/trade. Further, a survey of own account activities based on the frame provided by the Census 2011 is suggested to be conducted in order to find out different dimensions of such activities in Nepalese economy.

2.1 Background

The informal economy is a major source of employment and income in many countries. Millions of people around the world are earning a living in the informal economy. It exists in all labour markets, in both high and low income countries, but is more common in developing countries. Nepal's economy is also dominated by the informal sector's activities. According to a World Bank Study, the informal economy in Nepal constitutes about 37.5% of the GDP, higher than other countries of South Asia (World Bank 2011). Its share in employment is estimated at 96% (Sijapati 2014).

The informal economy comprises diverse workers and entrepreneurs who are not often recognised or protected under national legal and regulatory frameworks. In a study conducted by the International Labour Organization (ILO) in 47 countries in 2013, it was found that informal employment made up more than 60% of the total non-agricultural employment in South and East Asia. It ranged from 42% in Thailand to 84% in India.[1] The study further revealed that in Latin America and the Caribbean, informal employment made up a significant proportion of non-agricultural employment, ranging from 39.8% in Uruguay to 75% in the Plurinational State of Bolivia. The informal economy interacts closely with the formal economy.

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1 ILO 2013, Women and Men in the Informal Economy: A Statistical Picture (Second Edition).

The informal economy is made up of many types of enterprises. *Own account work* is one type of enterprise that falls within the informal economy. One of the Millennium Development Goals is to eradicate extreme poverty and hunger. The target set for attaining this goal is to "achieve full and productive employment and decent work for all, including women and young people". The proportion of *own account worker* is one of the indicators for assessing the achievement of the target. This clearly shows the importance of own account work in eradicating poverty and hunger from society. In view of its importance the Population Census of 2011 gathered information on own account work. This chapter analyses own account work data gathered using the household listing schedule from the Population Census of 2011.

2.2 Own account economic activities: definition

Own account work is often classified as one type of self-employment under the broad title of "status in employment". The 15th International Conference of Labour Statisticians in 1993 adopted a resolution concerning the "Groups" of employment. Following this the employment status were classified and widely known as International Classification of Status in Employment (ICSE-93). The ICSE-93 has six groups of employment.[2] One of the six types of employment identified is "own account workers". According to the ILO the definition of "o*wn-account workers"* are those workers who, working on their own account or with one or more partners, hold the type of job defined as "a self-employment job" and have not engaged on a continuous basis any "employees" to work for them during the reference period".

2.3 Own account economic activities in population census 2011

Three types of tools were used in the Population Census of 2011. They include:

- Listing Form/Listing Schedule
- Individual Form 1
- Individual Form 2

It should be noted that the household listing was undertaken on May 15, 2011, one month before the main census and lasted for 18 days. The main census started on June 17, 2011. Due to this time gap there could be some variations on the number of households enumerated between the two.

The Population Census of 2011 defined own account economic activities as those which are unincorporated/non registered, have no regular paid employees, and are non-agriculture activities operated exclusively by household members that are conducive to household economic benefit.[3] Any activities outside agriculture were considered as own account economic activities if they fulfilled the following four criterions:

- Operated through capital invested (cash, kind and labour) by household head or any member but no regular paid employees.
- Conducive to household economic benefit.
- Unincorporated/not registered by government, NGOs, Local Government or as a separate business entity.
- In case of service, it must be sold to another entity.

2 CBS, Manual for 2011 Population Census

3 CBS, Manual for 2011 Population Census

The census definition clearly states, "Goods produced could be both for household consumption and sale".

Listing schedule

The census listing schedule contained questions on "own account small business activities of households" The question contained in the schedule were:

- Does this household operate own small business other than agriculture? (unincorporated/not registered and no paid employees)? (Q No 29)
- This was followed by another question on type of own account activities operated (Q No 30)

In this chapter this data set has been used for analysis. It should be mentioned here that this schedule has very limited information for analysis. Some of the information that was contained in the schedule was not available for analysis although it was important, so it is essential that the data limitations be recognised.

2.4 Informal employment and own account workers without employees: insights from NLFS 2008

The second round of the Nepal Labour Force Survey 2008 (NLFS II) was conducted in 2008. This survey gathered data on informal employment associated with the informal sector. The NLFS II followed the ILO's international standard definition of the informal sector (ILO, 1993). The survey, defined the informal sector only in respect of non-agriculture activities (CBS, 2009). Added to the concept of the informal sector is the new concept of informal employment, which was introduced in 2003 by the International Conference of Labour Statisticians. This concept is closely linked to own account economic activities. CBS in its NLFS II included this new concept of informal employment, which constituted the following:

1. All own account workers without employees
2. All employers in the informal sector
3. All contributing family workers
4. All employees in informal jobs.

This clearly shows that own account workers are one type of informal employment.

The NLFS 2008 estimated that around 2,142,000 people aged 15 and over were employed in the informal sector. The survey recorded 969,000 people who were "self employed without regular paid employees". This accounted for 45% of all those employed in the informal sector. This definition is close to the Population Census of 2011 definition of "Own account workers outside agriculture".

Some of the key findings of NLFS II with respect to "own account business" are summarised in Table 2.1.

Table 2.1: Informal sector workers, by sex, locality and own business with no employees type, Nepal 2008

Description	Total	%	Urban	%	Rural	%
A. Employed in Informal Sectors						
Total	**2,142,000**	**100**	**677,000**	**31.61**	**1,465,000**	68.39
Male	1,379,000	64.38	418,000	30.31	961,000	69.69
Female	763,000	35.62	259,000	33.94	504,000	66.06
B. Own Business with no employees						
Total	**969,000**	**100**	**304,000**	**31.37**	**665,000**	68.63
Male	661,000	68.21	200,000	30.26	461,000	69.74
Female	308,000	31.79	104,000	33.77	204,000	66.23

Source: NLFS II 2008, Table 12.4, CBS 2009

2.5 Own account economic activities: current status

The Population Census of 2011 enumerated a total of 5,422,045 households in the listing schedule. These households were asked if they were engaged in own account economic activities outside agriculture. Only 5,393,560 households reported their status, 28,485 households were recorded as "not reported". The census of 2011 data showed that only 14% of households were engaged in own account economic activities outside agriculture (Table 2.2). When compared with the 2001 census there has been a decline in the number of households engaged in own account economic activities by 6 percentage points between 2001 and 2011 (Table 2.2). In the 2001 census 20% of households were engaged in own account economic activities outside agriculture. The NLFS II estimated that "self employed without regular paid employees" accounted for 45% of the total people engaged in informal employment (CBS 2009). Although the data are not strictly comparable, the current status of 14% appears to be on the low side.

A combination of factors could be responsible for the current status. Firstly, there could be an increase in own account economic activities associated to agriculture as the present definition captures only activities *outside agriculture*. The data from schedule one could shed some light on this. The definition clearly states that vegetable farming, livestock, fisheries etc. are not included in the definition. Secondly, there could have been a rise in incorporated/registered economic activities, which the definition also excludes. Thirdly, the formal sector might have grown. Fourthly all four criterions have to be met to be considered as own account economic activities. Fifthly, the reference period of seven days is too short. Six, rising foreign employment could also have impacted on such a low level of own account economic activities outside agriculture.

Although there has been a decline in own economic activities compared to 2001, it should be noted that in the 2001 census, unlike in 2011, the information about own economic activities were part of individual form one of the main schedule. Further the question for recording own economic activities outside agriculture was not identical in 2001 and 2011. In 2001 the phrase "unincorporated/unregistered" was not included in Form-1, although it was mentioned in the manual. In the 2011 census this was mentioned in the Listing Schedule itself. This could partly explain the decline in the level of own account workers in 2011.

Table 2.2: Percentage distribution of status of households engaged in small enterprise outside agriculture by place of residence, ecological zone and development region, Nepal, 2001 and 2011

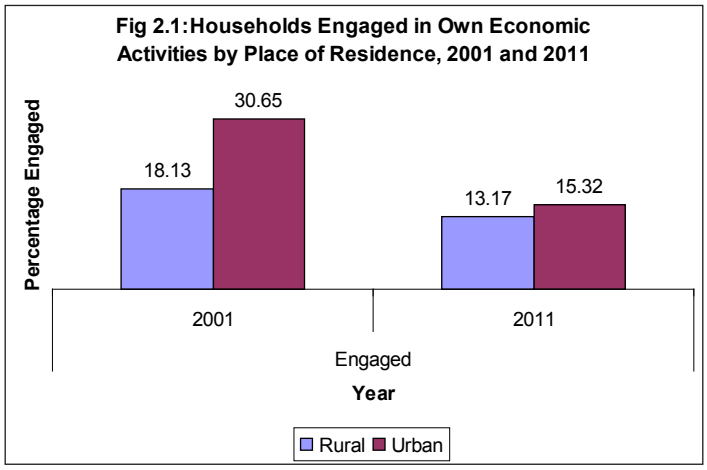
Engaged in Small Business	2001			2011		
	Engaged	Not Engaged	Total HH	Engaged	Not Engaged	Total HH*
Nepal	20.00	80.00	4174374	14.02	85.98	5393560
Place of Residence						
Rural	18.13	81.87	3509867	13.70	86.30	4343557
Urban	30.65	69.35	664507	15.32	84.68	1050003
Ecological Zone						
Mountain	15.07	84.93	285213	17.47	82.53	362566
Hill	17.60	82.40	1951191	12.84	87.16	2520664
Tarai	22.89	77.11	1937970	14.71	85.29	2510330
Development Region						
Eastern	22.18	77.82	1000358	15.37	84.63	1220166
Central	22.04	77.96	1465753	14.37	85.63	1952275
Western	18.28	81.72	863045	12.32	87.68	1060180
Mid-western	17.35	82.65	479817	14.93	85.07	692724
Far Western	14.81	85.19	365401	11.52	88.48	468215

Excludes "not reported"
Source: Population Census 2001 and Population Census 2011

2.5.1 Place of residence and own account economic activities

Place of residence data of own account workers indicates that more urban households (15.32%) were engaged in own account economic activities compared to rural households (13.70%). However, this difference is significantly less compared to the 2001 census data when there was a significant difference of 12 percentage points between rural and urban areas (Fig 2.1).

The distribution of total households engaged in own economic activities outside agriculture in the 2011 census by place of residence, showed an overwhelmingly larger proportion of rural households (79%) engaged in own economic activities outside agriculture compared to urban households at 21%.



2.5.2 Ecological zone and own account economic activities

Interestingly Mountain region (17.47%) recorded the highest proportion of households engaged in own economic activities outside agriculture, followed by Tarai (14.71%) and Hill (12.84%). The development of the tourism sector in Mountain region has resulted in an impressive growth in the service sectors in this region, which has resulted in it having the largest share of own account economic activities outside agriculture.

It is also interesting to note the reversal in trend between 2001 and 2011. In 2001, Tarai region recorded the highest proportion of households engaged in own economic activities outside agriculture (22.89%), which in 2011 has been replaced by Mountain region. The Tarai now ranks second (14.71%) in 2011. It is also equally interesting to note that the proportion of households engaged in own account economic activities has only increased slightly in Mountain from 15% in 2001 to 17.47% in 2011, while it has declined in Hill and Tarai (See Table 2.2).

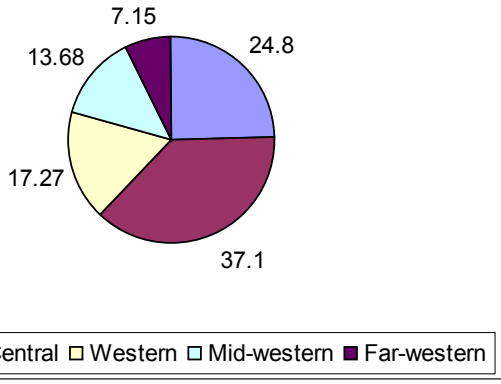
2.5.3 Development region and own account economic activities

The proportion of households engaged in own economic activities by development region revealed that Eastern Region has the highest proportion of households engaged in own economic activities at 15.37% while the lowest is in Far western region at 11.52%. Data indicate a very minimum variation across development regions (Table 2.2).

Total households engaged in own economic activities in the country by development region, however, revealed a slightly different pattern. Central region ranked first with 37%, while Eastern region ranked second with 25%. The remaining three regions stood at 17% in Western, 14% in Mid-western and 7% in Far-western region (Fig 2.2).

Data on households engaged in own economic activities outside agriculture by eco – development region is presented in Annex 2.1. Western Mountain had the highest proportion (27%) of households engaged in own economic activities while Far-western hill had the lowest at 10%. (Annex 2.1).

Fig 2.2: % Engaged in own economic activities outside agriculture, 2011



2.5.4 Own account economic activities: district patterns

District level data indicated that 34 districts had more than the national average of 14.02%, while 41 districts had less than the national average. The top five districts included Mustang (27.73%), Humla (25.50%), Manang (24.70%), Solukhambu (23.69%) and Bardiya (23.34%). The lowest three districts included Accham (7.58%), Khotang (8.32%) and Dang (9.13 %). Considering the overall development index, a shift from non -registered to registered economic activities could be a reason that Dang is ranked in the lowest three. The detailed district level data is presented in Annex 2.2

2.6 Background characteristics of own account workers

Attempts were made to examine households engaged in own account economic activities by their background characteristics to see if any specific patterns could be discerned. Very limited information about the background characteristics of the engaged households was collected in the listing schedule. The background characteristics considered were family size, land holding and livestock. Though caste/ethnicity, gender and size of land holding data were gathered, these characteristics were not available for analysis.

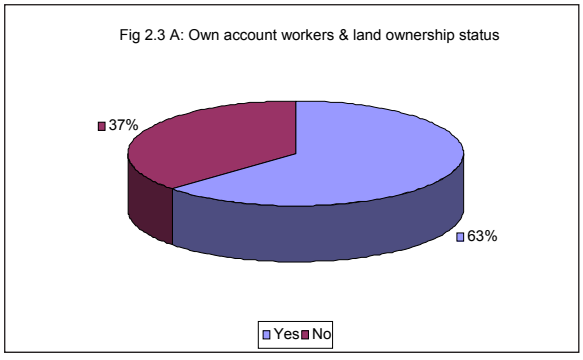
The results showed a relationship between family size and engagement in own account economic activities. As seen in Table 2.3, as family size increased so did the proportion of engaged in own account economic activities, showing a very clear pattern. The reason for this pattern could be due to the pressing need among larger sized families to be engaged in any economic activity to meet the family's needs. This relationship is therefore in the expected direction. Similarly, a higher proportion (17.7%) of households having no land holding for agriculture purpose were engaged in own account economic activities, compared to those who owned land holding (12.48%). It may be concluded that there is more urgency for engagement in own account economic activities by those who do not own land holding as compared to those do. A similar pattern was observed among households who owned livestock. Those who did not own livestock tended to be more engaged in own economic activities (16.95%), compared to those who owned livestock (12.48%).

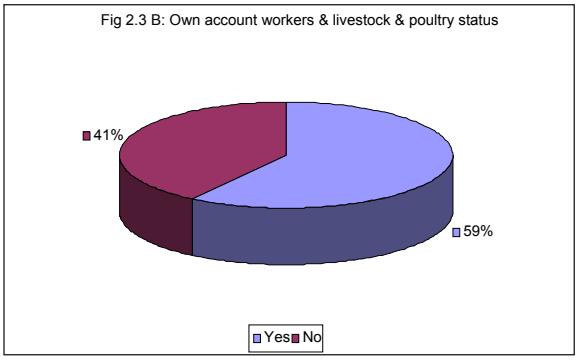
The analysis by size of livestock and poultry however, revealed a different pattern. As more livestock were owned, the proportion engaged in own economic activities was lower (Table 2.3). A higher number of livestock and poultry could act as a barrier for engagement in own economic activities. This is an inference that could be drawn from this relationship.

Table 2.3: Percentage distribution of status of households engaged in small enterprise outside agriculture by background characteristics, Nepal 2011

Background Characteristics	Households' Engagement Status*			
	Engaged	%	Not Engaged	%
A. Household Size	756,217		4,637,343	
Less than 3 members	81,182	10.03	728,008	89.97
3	98,903	12.62	684,651	87.38
4	157,152	14.61	918,202	85.39
5	143,152	14.87	819,255	85.13
6 and above	275,828	15.64	1,487,227	84.35
B. Land holding for agriculture purpose	756,217		4,637,343	
Yes	475,820	12.48	3,333,897	87.52
No	280,397	17.70	1,303,446	82.30
C. Having Live Stock & poultry for agriculture practice	756,217		4,637,343	
Yes	452,998	12.56	3,152,007	87.44
No	303,219	16.95	1,485,336	83.05
D. By size of Livestock & Poultry				
1-2	161,014	21.29		
3-5	127,836	16.90		
6-10	37,654	4.98		
11-25	5,178	0.68		
26 and above	292	0.04		

Source: Population Census 2011
** Excludes "Not reported"*





2.6.1 Own Account Economic Activities, Land Holding and Livestock and Place of Residence

Among "engaged in own account economic activities", the ownership of landholding and livestock in rural areas clearly showed the dominance of rural households. Those who were engaged but did not own land and livestock were urban in nature, while those who were engaged and owned land and livestock were rural in character. Therefore a clear difference by place of residence has been established for engaged in own account economic (Table 2.4).

Table 2.4: Distribution of households engaged in small-scale enterprises, their land holding and livestock & poultry status by place of residence, Nepal 2011

Characteristics	Engaged in Small Scale Enterprise			
	Agriculture Land Holding		Livestock and Poultry	
	Yes	No	Yes	No
Rural	407,060 (91.42%)	188,236 (60.54%)	415,631 (91.75%)	179,665 (59.25%)
Urban	38,208 (8.58%)	122,713 (39.46%)	37,367 (8.25%)	123,554 (40.75%)
Total	445,268 (100%)	310,949 (100%)	452,998 (100%)	303,219 (100%)

Note: Figures in the parenthesis are percentages
Source: Population Census 2011

2.7 Own account economic activities and types of enterprises

Those who reported "yes" were requested to mention the type of activities the family was engaged in. The census of 2011 broadly classified them into five categories. For the operational definition of each of the category, readers should refer to the Census Manual 2011. The categories include:

- Cottage industry
- Business
- Transport
- Service
- Others.

Business (42%) and service (40%) were the two leading types of activities where households were found heavily engaged. This is true in both rural and urban areas. In 2001 the highest proportion of households that was engaged in service type activities was 35%. In 2011 this has changed and business types emerged as the leading type of own account economic activities. The other three types in total accounted for less than 20% (Table 2.5).

Type of enterprise data by ecological belt is presented in Table 2.5. While *service type* of own account economic activities was more prominent in Mountain (45.46%) business type was more common in Hill (42%) and Tarai (45%). The trend is taking the expected direction. Own account economic activities associated with the service sector have flourished in Mountain because of the growth in the tourism industry. Since the trekking business has grown so have the services of porters in Mountain region. The porter service is defined under service type of own account economic activities outside agriculture. A comparison between 2001 and 2011 data, however, showed a shift towards business type activities in

Hill and Tarai in 2011 (Table 2.6).

Table 2.5: Percentage distrib ution of households engaged in small enterprise outside agriculture by type of enterprise and by place of residence, Nepal, 2001 and 2011

Engaged in Type of Small Business	2001			2011 (N=756217)		
	Rural	Urban	Total	Rural	Urban	Total
Cottage Industry	8.09	6.86	7.79	10.82	7.83	10.18
Business/Trade	26.60	42.46	30.44	40.28	49.85	42.31
Transportation	2.23	4.05	2.67	3.43	4.02	3.56
Service	35.99	31.81	34.97	41.28	33.61	39.65
Others	27.10	14.82	24.12	4.19	4.69	4.30
	100.00	100.00	100.00	100.00	100.00	100.00

Source: Population Census 2011

Figure 2.4 a Percentage distribution of households engaged in small enterprise outside agriculture by type of enterprise, 2011

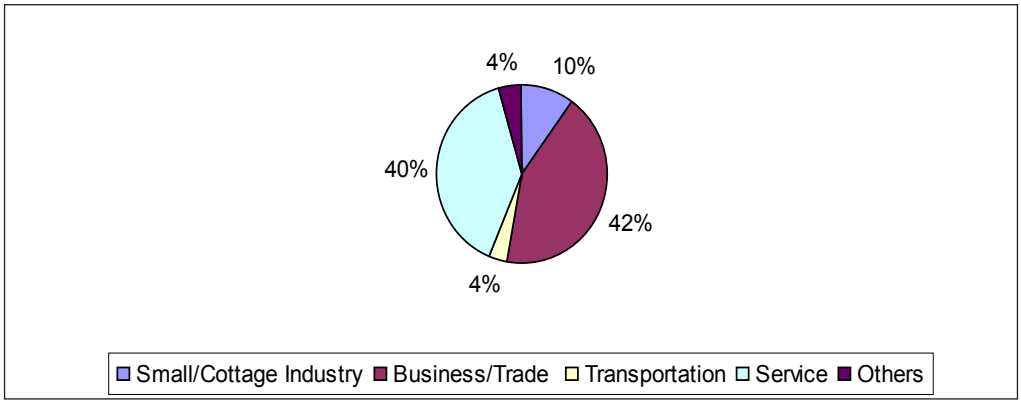


Figure 2.4 b Percentage distribution of households engaged in small enterprise outside agriculture by type of enterprise, rural, 2011

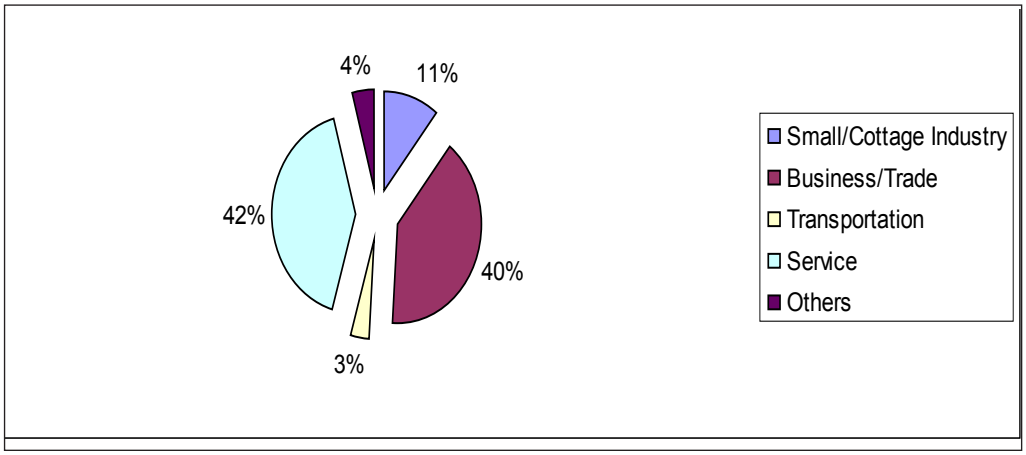


Figure 2.4 c Percentage distribution of households engaged in small enterprise outside agriculture by type of enterprise, urban, 2011

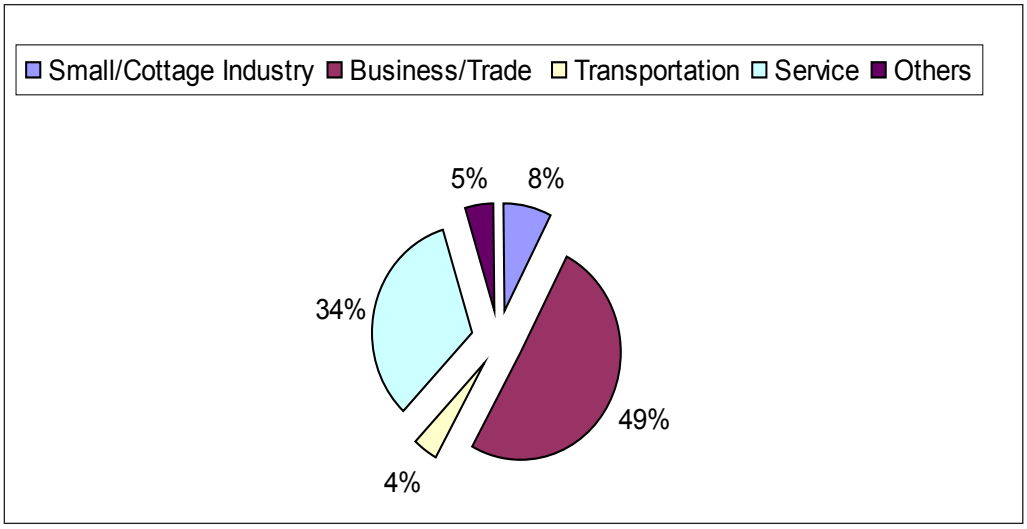


Table 2.6: Percentage distribution of households engaged in small enterprise outside agriculture by type of enterprise and by ecological zone, Nepal, 2001 and 2011

Engaged in type of small business	2001			2011 (N=756217)		
	Mountain	Hill	Tarai	Mountain	Hill	Tarai
Cottage Industry	14.49	9.79	5.55	16.77	12.12	7.35
Business/Trade	27.42	32.16	29.37	31.40	41.91	44.53
Transportation	1.97	2.36	2.98	3.04	2.37	4.69
Service	36.55	37.60	32.73	45.46	39.01	39.21
Others	19.58	18.08	29.37	3.33	4.58	4.22
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: Population Census 2011

2.7.1 District patterns by type of activities engaged

The distribution of districts by type of own account economic activities revealed that in more than two thirds of districts business (52%) and transportation (52%) are less than the national average. The cottage industry in 40 districts and service activities in 42 districts are higher than the national average (Table 2.7). The number of households engaged in various types of own account economic activities by districts are presented in Annex 2.4.

Table 2.7: Distribution of districts by type of activities engaged in, compared with national average

Type	National average.	Number of districts compared		
		> National average.	< National average.	National average equal
Cottage Industry	10.18%	40	35	X
Business	42.31%	25	50	X
Transportation	3.56%	22	52	1
Service	39.65%	42	33	X
Others	4.30%	27	48	X

Source: Population Census 2011

2.7.2 Own account economic activities and background characteristics of the household

Types of enterprise data by background characteristics of households are presented in Table 2.8. Business/ trade and service type own account activities are the two major activities in all five development regions. Households engaged in transport and other economic activities were minimal. *Business type* of own account economic activities was more prominent in Central Region (44.67%) while *service type* was more prevalent in Mid-western Region (49.42%). Only one in 10 households was engaged in cottage industries in all five regions except in western region. In the 2001 census "other type" of activities was prominent, ranking second in two development regions (Table 2.8). One in five households, even more in some regions, were engaged in "other type" which showed a marked decline in 2011 at less than 5%. This marked decline raises issues of data comparability. A change in the definition between censuses could have caused such variations.

Further analysis of data showed that households engaged in cottage industry and transportation type of own account activities increased along with the increase in the size of the family, whereas, on the whole, service type activities decreased with the size of the family. In the case of business/trade type activities there is a clear increasing pattern up to families of four. After more than four family members, households engaged in this activity type declined indicating no clear pattern (Table 2.8).

Households who own agriculture land and livestock tend to be engaged more in cottage, service and other types. However, this pattern is quite the opposite in the case of business type. (Table 2.8) The findings clearly show that those who do not own agriculture land and livestock tend to opt for business/trade type activities**.** Ownership of agriculture land and livestock is labour demanding in nature. Therefore households with no agriculture and livestock find business/trade type activities more appropriate for them. Data also revealed that households who own agriculture land and livestock tend to be engaged more in service type activities (more than 40%) than those who do not own land and livestock (35%). By virtue of the nature of services rendered this type of activity is selected by those who do not own agriculture land and livestock. Therefore the relationship is not progressing in the expected direction and further analysis is needed. A further classification of data by family size could shed more light on this issue.

Table 2.8: Percentage distribution of households engaged in types of small enterprise outside agriculture by background characteristics, Nepal, 2011

Background characteristics	Type of Small Business Engaged					Total
	Cottage Industries	Business/Trade	Transport	Services	Others	
A. Development region						
Eastern	10.62	42.85	3.56	38.51	4.46	100.00
Central	10.93	44.67	4.06	34.97	5.36	100.00
Western	7.80	44.20	2.20	42.70	3.10	100.00
Mid-Western	10.80	33.37	3.89	49.42	2.52	100.00
Far-Western	9.34	40.83	3.48	41.82	4.53	100.00
Total	**10.18**	**42.31**	**3.56**	**39.65**	**4.30**	**100.00**
B. Household size						
Less than 3 person	9.17	41.60	2.11	42.78	4.34	100.00
3	9.30	43.82	3.02	39.53	4.33	100.00
4	9.29	44.14	3.47	38.90	4.20	100.00
5	9.87	42.52	3.51	39.78	4.32	100.00
6 and above	11.45	40.84	4.25	39.14	4.32	100.00
C. Land holding for agriculture practice						
Yes	12.22	37.54	3.68	42.18	4.37	100.00
No	6.72	50.41	3.34	35.35	4.18	100.00
D. Livestock for agriculture practice						
Yes	12.61	36.10	3.79	43.13	4.37	100.00
No	9.48	47.41	3.88	35.23	3.99	100.00

Source: Population Census 2011

Table 2.9: Percentage distribution of households engaged in types of small enterprise outside agriculture by development region, Nepal, 2001

Background Characteristics	Type of Small Business Engaged					Total
	Cottage Industries	Trade& Commerce	Transport	Services	Others	
A. Development Region						
Eastern	6.62	27.76	2.60	34.50	28.51	100.00
Central	8.24	32.48	3.12	34.96	21.21	100.00
Western	6.72	32.30	2.45	37.41	21.12	100.00
Mid-Western	10.05	27.41	2.04	34.82	25.68	100.00
Far-Western	9.57	28.55	1.87	30.20	29.82	100.00
Total	7.79	30.44	2.67	34.97	24.12	100.00

Source: Population Census 2011

2.7.3 Types of own account economic activities, land holding and livestock and place of residence

A relatively higher proportion of households were engaged in all the economic activity categories, except in business/trade, who owned land and livestock irrespective of their place of residence (Table 2.10). In the case of business and trade, the opposite is true irrespective of place of residence. Therefore the place of residence has no effect on engagement in own economic activities type by ownership of land and livestock.

Table 2.10: Percentage distribution of households having engaged in type of small enterprise by land for agricultural practice, livestock and poultry and by place of residence, Nepal 2011

Place of residence	Type of Small Enterprise Engaged					Total
	Cottage industries	Business/trade	Transport	Services	Others	
A. Agriculture Land						
Urban Yes	9.80	45.34	4.07	35.45	5.34	100.00
Urban No	7.22	51.25	4.00	33.03	4.49	100.00
Rural Yes	12.68	36.43	3.63	42.94	4.32	100.00
Rural No	6.80	48.59	3.01	37.69	3.91	100.00
Livestock & Poultry						
Urban Yes	8.32	44.50	4.79	37.32	5.06	100.00
Urban No	7.71	51.15	3.83	32.70	4.60	100.00
Rural Yes	12.95	35.42	3.71	43.59	4.32	100.00
Rural No	6.63	49.79	2.89	36.75	3.94	100.00

Source: Population Census 2011

2.8 Issues and discussion

There are certain issues associated with the data collected through the "listing" form which merit discussion. The way questions were framed and the contents of the field manual did not fulfil the objectives of the census. The objective of collecting own account economic activities, as mentioned in the manual, was to prepare a comprehensive list of own account economic activities that households are engaged in. However, the response has been classified into five broad categories with virtually no scope of preparing a detailed list of own account activities. This also allowed for subjective judgment on the part of the supervisor when selecting the correct response as some of the own account activities are difficult to fit in to a specific category.

In addition there is the issue of non-comparability of data from the 2001 and 2011 censuses due to different definitions. The question in the household record under individual form 1 of the 2001 census and the household "listing form" of the 2011 census is not identical and the commonness in the field manual often does not ensure identical responses causing further problems in data comparability.

There are data limitations for analysis. For some of the characteristics, data have been collected but they are not available for analysis, such as ethnicity data and size of land holding data that have been gathered but due to processing problems are not available for analysis.

The analysis lacked statistical rigour for clearly bringing out the relationship between outcome and household characteristics. Instead of simply offering the operational definition of each type of activity, the manual should have a comprehensive list showing clearly the type of activities that fall within each category.

It is suggested that the results from the individual form on "economic activities" should be looked at when interpreting the data.

The listing should also include more questions so that the determinants of own account activities can be fully examined and identified for policy making.

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Annex 2.1: Households having small scale enterprise by eco-development region, 2011

Eco-Development Region	Have small business			Total		
	Yes	No	Not reported		Total Adjusted.	% Engaged
Eastern Mountain	15,632	68,986	199	84,817	84,618	18.47
Eastern Hill	44,455	300,155	1,638	346,248	344,610	12.90
Eastern Tarai	127,499	663,439	8,421	799,359	790,938	16.12
Central Mountain	19,607	101,971	417	121,995	121,578	16.13
Central Hill	147,696	861,953	4,814	1,014,463	1,009,649	14.63
Central Tarai	113,299	707,749	4,338	825,386	821,048	13.80
Western Mountain	1,274	3,477	2	4,753	4,751	26.82
Western Hill	75,495	598,490	2,902	676,887	673,985	11.20
Western Tarai	53,867	327,577	2,412	383,856	381,444	14.12
Mid-Western Mountain	13,507	55,038	203	68,748	68,545	19.71
Mid-Western Hill	39,769	291,270	841	331,880	331,039	12.01
Mid-Western Tarai	50,152	242,988	1,008	294,148	293,140	17.11
Far-Western Mountain	13,328	69,746	126	83,200	83,074	16.04
Far-Western Hill	16,185	145,196	448	161,829	161,381	10.03
Far-Western Tarai	24,452	199,308	716	224,476	223,760	10.93
Total	**756,217**	**4,637,343**	**28,485**	**5,422,045**	**5,393,560**	**14.02**

Source: Population Census 2011

Annex 2.2 Households by status of their engagement in small scale enterprise outside agriculture by District, Nepal, 2011

District	Have small business			Total		
	Yes	No	Not reported		Tot adjusted	% Engaged
Taplejung	4,175	22,141	143	26,459	26,316	15.86
Panchthar	4,927	36,053	149	41,129	40,980	12.02
Ilam	9,683	53,979	802	64,464	63,662	15.21
Jhapa	38,312	144,914	1,091	184,317	183,226	20.91
Morang	34,975	177,781	1,084	213,840	212,756	16.44
Sunsari	24,552	135,298	2,400	162,250	159,850	15.36
Dhankuta	4,353	33,223	29	37,605	37,576	11.58
Terhathum	3,319	18,731	22	22,072	22,050	15.05
Sankhuwasabha	5,832	28,722	50	34,604	34,554	16.88
Bhojpur	4,164	35,196	45	39,405	39,360	10.58
Solukhumbu	5,625	18,123	6	23,754	23,748	23.69
Okhaldhunga	4,385	28,019	40	32,444	32,404	13.53
Khotang	3,519	38,768	374	42,661	42,287	8.32
Udayapur	10,105	56,186	177	66,468	66,291	15.24
Saptari	18,264	101,264	1,502	121,030	119,528	15.28
Siraha	11,396	104,182	2,344	117,922	115,578	9.86
Dhanusa	19,650	116,894	1,682	138,226	136,544	14.39
Mahottari	14,326	96,481	504	111,311	110,807	12.93
Sarlahi	16,149	115,866	781	132,796	132,015	12.23
Sindhuli	5,363	51,904	265	57,532	57,267	9.36
Ramechhap	5,698	38,018	155	43,871	43,716	13.03
Dolakha	6,863	38,603	175	45,641	45,466	15.09
Sindhupalchok	11,305	55,075	224	66,604	66,380	17.03
Kavrepalanchok	14,419	65,548	646	80,613	79,967	18.03
Lalitpur	18,796	90,126	546	109,468	108,922	17.26
Bhaktapur	16,899	51,410	256	68,565	68,309	24.74
Kathmandu	55,275	379,500	643	435,418	434,775	12.71
Nuwakot	7,669	49,593	1,891	59,153	57,262	13.39
Rasuwa	1,439	8,293	18	9,750	9,732	14.79
Dhading	11,690	61,928	196	73,814	73,618	15.88
Makwanpur	11,887	73,926	216	86,029	85,813	13.85
Rautahat	13,679	92,271	690	106,640	105,950	12.91
Bara	16,571	91,862	131	108,564	108,433	15.28
Parsa	14,437	80,903	178	95,518	95,340	15.14
Chitawan	18,487	113,472	372	132,331	131,959	14.01
Gorkha	8,026	58,307	83	66,416	66,333	12.10
Lamjung	5,289	36,700	41	42,030	41,989	12.60
Tanahu	7,213	70,149	907	78,269	77,362	9.32
Syangja	6,594	62,147	124	68,865	68,741	9.59
Kaski	15,069	109,953	461	125,483	125,022	12.05
Manang	355	1,082	2	1,439	1,437	24.70
Mustang	919	2,395	0	3,314	3,314	27.73
Myagdi	3,652	24,025	37	27,714	27,677	13.20

(Table continues...)

(Annex 2.2 continued...)

District	Have small business			Total		
	Yes	No	Not reported		Tot adjusted	% Engaged
Parbat	3,904	31,574	184	35,662	35,478	11.00
Baglung	5,978	55,157	330	61,465	61,135	9.78
Gulmi	7,003	57,849	30	64,882	64,852	10.80
Palpa	7,086	51,539	643	59,268	58,625	12.09
Nawalparasi	18,213	110,292	243	128,748	128,505	14.17
Rupandehi	26,614	136,090	1,138	163,842	162,704	16.36
Kapilbastu	9,040	81,195	1,031	91,266	90,235	10.02
Arghakhanchi	5,681	41,090	62	46,833	46,771	12.15
Pyuthan	6,423	41,110	160	47,693	47,533	13.51
Rolpa	5,529	38,136	57	43,722	43,665	12.66
Rukum	4,822	36,899	99	41,820	41,721	11.56
Salyan	4,842	41,559	104	46,505	46,401	10.44
Dang	10,559	105,064	703	116,326	115,623	9.13
Banke	20,213	74,265	210	94,688	94,478	21.39
Bardiya	19,380	63,659	95	83,134	83,039	23.34
Surkhet	8,890	63,614	306	72,810	72,504	12.26
Dailekh	5,112	43,703	82	48,897	48,815	10.47
Jajarkot	4,151	26,249	33	30,433	30,400	13.65
Dolpa	1,078	6,384	8	7,470	7,462	14.45
Jumla	4,322	14,961	14	19,297	19,283	22.41
Kalikot	4,310	18,660	15	22,985	22,970	18.76
Mugu	1,402	8,036	144	9,582	9,438	14.85
Humla	2,395	6,997	22	9,414	9,392	25.50
Bajura	4,061	20,770	21	24,852	24,831	16.35
Bajhang	5,579	28,132	43	33,754	33,711	16.55
Achham	3,656	44,552	92	48,300	48,208	7.58
Doti	4,115	37,153	96	41,364	41,268	9.97
Kailali	15,008	126,745	608	142,361	141,753	10.59
Kanchanpur	9,444	72,563	108	82,115	82,007	11.52
Dadeldhura	3,726	23,234	51	27,011	26,960	13.82
Baitadi	4,688	40,257	209	45,154	44,945	10.43
Darchula	3,688	20,844	62	24,594	24,532	15.03
Total	**756,217**	**4,637,343**	**28,485**	**5,422,045**	**5,393,560**	**14.02**

Source: Population Census 2011

Annex 2.3: Households engaged in small scale enterprise by types of enterprise and by eco-development region, Nepal, 2011

Eco-dev. region	Type of small business engaged						Total number
	Cottage industry	Business	Transportation	Service	Other	Total %	
Eastern Mountain	16.81	29.53	0.68	47.44	5.54	100.00	15,632
Eastern Hill	14.03	36.96	2.75	42.66	3.60	100.00	44,455
Eastern Tarai	8.67	46.54	4.19	35.97	4.63	100.00	127,499
Central Mountain	17.07	35.49	1.81	43.03	2.61	100.00	19,607
Central Hill	12.53	45.76	3.02	32.87	5.81	100.00	147,696
Central Tarai	7.78	44.84	5.81	36.32	5.25	100.00	113,299
Western Mountain	21.43	34.14	1.26	43.09	0.08	100.00	1,274
Western Hill	9.11	42.52	1.46	44.07	2.83	100.00	75,495
Western Tarai	5.65	46.70	3.35	40.76	3.54	100.00	53,867
Mid-Western Mountain	18.32	31.07	7.83	41.79	0.99	100.00	13,507
Mid-Western Hill	15.11	35.16	1.63	44.80	3.30	100.00	39,769
Mid-Western Tarai	5.35	32.57	4.63	55.14	2.31	100.00	50,152
Far-Western Mountain	14.26	27.67	2.92	50.65	4.50	100.00	13,328
Far-Western Hill	9.82	34.20	1.46	47.12	7.38	100.00	16,185
Far-Western Tarai	6.33	52.39	5.12	33.51	2.65	100.00	24,452
Total	**10.18**	**42.31**	**3.56**	**39.65**	**4.30**	**100.00**	**756,217**

Source: Population Census 2011

Annex 2.4 : Household by type of small scale business for district

District	Type of Small Business					Total
	Cottage industry	Business	Transportation	Service	Other	
Taplejung	1,098	1,179	45	1,450	403	4,175
Panchthar	660	2,058	58	2,002	149	4,927
Ilam	1,837	3,700	688	2,962	496	9,683
Jhapa	3,379	18,284	1,672	13,321	1,656	38,312
Morang	3,225	16,111	1,594	12,604	1,441	34,975
Sunsari	1,693	11,634	1,074	8,779	1,372	24,552
Dhankuta	355	1,840	68	2,029	61	4,353
Terhathum	529	934	39	1,461	356	3,319
Sankhuwasabha	1,331	2,385	44	1,639	433	5,832
Bhojpur	826	1,368	26	1,869	75	4,164
Solukhumbu	198	1,052	18	4,327	30	5,625
Okhaldhunga	858	1,217	27	2,206	77	4,385
Khotang	620	1,156	26	1,583	134	3,519
Udayapur	554	4,156	289	4,852	254	10,105
Saptari	1,900	7,291	602	7,755	716	18,264
Siraha	854	6,023	406	3,398	715	11,396
Dhanusa	1,697	8,933	940	6,450	1,630	19,650
Mahottari	1,362	6,290	881	5,340	453	14,326
Sarlahi	1,317	7,246	668	5,932	986	16,149
Sindhuli	453	1,840	50	2,783	237	5,363
Ramechhap	950	1,908	76	2,580	184	5,698
Dolakha	717	2,327	89	3,616	114	6,863
Sindhupalchok	2,224	4,097	253	4,421	310	11,305
Kavrepalanchok	1,922	5,875	446	5,642	534	14,419
Lalitpur	3,569	8,199	466	5,498	1,064	18,796
Bhaktapur	3,066	6,735	514	5,089	1,495	16,899
Kathmandu	4,062	30,428	1,871	15,230	3,684	55,275
Nuwakot	969	2,576	292	3,238	594	7,669
Rasuwa	405	535	12	400	87	1,439
Dhading	2,189	4,543	237	4,282	439	11,690
Makwanpur	1,332	5,485	508	4,213	349	11,887
Rautahat	1,045	5,798	1,059	4,652	1,125	13,679
Bara	1,381	7,352	999	6,212	627	16,571
Parsa	930	6,365	1,218	5,480	444	14,437
Chitawan	1,087	8,816	818	7,081	685	18,487
Gorkha	464	3,055	50	4,236	221	8,026
Lamjung	645	2,161	52	2,337	94	5,289
Tanahu	830	4,216	112	1,656	399	7,213
Syangja	385	2,672	88	3,377	72	6,594
Kaski	1,558	7,415	455	5,151	490	15,069
Manang	79	125	6	144	1	355
Mustang	194	310	10	405		919
Myagdi	338	1,334	58	1,860	62	3,652
Parbat	203	1,593	39	1,969	100	3,904
Baglung	648	2,109	80	2,890	251	5,978

(Table continues...)

(Table 2.4 continued...)

District	Type of Small Business					Total
	Cottage industry	**Business**	**Transportation**	**Service**	**Other**	
Gulmi	524	2,790	48	3,421	220	7,003
Palpa	706	2,672	29	3,563	116	7,086
Nawalparasi	1,601	9,076	530	6,623	383	18,213
Rupandehi	1,002	11,664	937	12,127	884	26,614
Kapilbastu	441	4,417	340	3,204	638	9,040
Arghakhanchi	579	2,081	92	2,814	115	5,681
Pyuthan	1,094	2,022	46	3,137	124	6,423
Rolpa	1,207	1,862	112	2,096	252	5,529
Rukum	1,295	936	100	2,351	140	4,822
Salyan	630	1,366	58	2,624	164	4,842
Dang	873	4,630	337	4,286	433	10,559
Banke	1,197	7,024	847	10,611	534	20,213
Bardiya	614	4,680	1,136	12,756	194	19,380
Surkhet	758	3,836	184	3,899	213	8,890
Dailekh	455	2,760	13	1,675	209	5,112
Jajarkot	570	1,202	135	2,035	209	4,151
Dolpa	218	345	104	392	19	1,078
Jumla	673	1,541	109	1,936	63	4,322
Kalikot	639	1,445	55	2,143	28	4,310
Mugu	419	388	205	370	20	1,402
Humla	525	477	585	804	4	2,395
Bajura	648	1,374	94	1,740	205	4,061
Bajhang	772	1,712	145	2,728	222	5,579
Achham	244	1,852	23	1,254	283	3,656
Doti	513	1,282	35	2,107	178	4,115
Kailali	1,212	8,297	889	4,168	442	15,008
Kanchanpur	336	4,514	362	4,025	207	9,444
Dadeldhura	375	1,045	84	1,929	293	3,726
Baitadi	458	1,357	95	2,337	441	4,688
Darchula	481	602	150	2,282	173	3,688
Total	**76,997**	**319,975**	**26,902**	**299,838**	**32,505**	**756,217**

CHAPTER 3

POPULATION AND ECONOMIC DEVELOPMENT

Dr. Ram Prasad Gyanwaly*

Abstract

This paper aims to analyze the structure of national output and economically active population, to examine the relationship between economically active population and GDP, and to analyze the indicators of economic development related to level of living. Using secondary data series spanning the period 1971 to 2011, structure of output and economically active population,and indicators of level of living are analyzed using descriptive approach. The relationship between economically active population and national output is examined by production function. Total factor productivity is estimated to examine the effect of technological advancement. There has been major shift in structure of national output and economically active population. Economic growth is emanating from population related and non related variables. In population side, economically active population and literacy rate are positively driving the growth process of the economy while life expectancy is negatively impacting the growth. In other side, government expenditure to GDP ratio, real growth in export and real capital stock are positively driving the growth process while inflation is decelerating the economic growth in Nepal. There have been remarkable improvements in indicators of economic development related to level of living. Average annual growth rate of real per capita GNP has been quite sluggish but positive.

3.1 Introduction

General background

The process of improving the quality of life of people is development. A major indicator of development is increase in level of living of people while the others are increase in self-esteem of people and freedom of choice of goods and services (Todaro, 1997). Latter two aspects are less measurable in economic term. However level of livings may be measured in term of increase in per capita income or GDP or GNP and improvement in some of the social indicators such as literacy rate, poverty level, life expectancy, infant mortality rate, death rate etc. How much of real goods and services are available to average citizen of a nation for consumption and investment do depends upon real per capita income or GNP. Real per capita income is positively influenced by growth rate of real GDP or GNP and negatively by growth rate of population. Thus, economic growth is the basis of economic development. Growth can be distributed among the citizen of a nation to reduce poverty and to develop more equitable society.

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Relationship between population and economic development may be positive or negative. National or domestic output is the basis of economic development. Without labour force production is not possible and labour force is the major component of population. In this sense population becomes the basis of production and hence the economic development. As the economic development is measured in term of per capita income then higher growth of population increasing the size of national population reduces the per capita production or per capita income. In this sense, population has adverse effect on economic development.

Economically active population contributes to economic growth through involvement in production activities. Development is related to per capita income so the size of working labour force does matter. Increase in total national output does not guarantee the increase in per capita output.

National output has been segregated in to various economic sectors in Nepal such as agriculture and fishery, mining and quarrying, construction, manufacturing etc. Similarly economically active populations are also associated with these economic sectors. None of these economic sectors can produce output without economically active population. With the pace of development the structure of output and economically active population change over time. Productivity also changes with the advancement of knowledge and technology. It is in this connection that a set of natural question arises.

- What is the structure of national output in Nepal?
- How many economically active populations are engaged in these sectors? What is their level of productivity?
- Is there relationship between economically active population and economic growth in Nepal?
- What is the status of indicators of level of living related to population in Nepal?

Objectives of the study

General objective of this study is to analysis the relation between population and economic development of Nepal. However its specific objectives are:

- To analyze the structure of national output and economically active population according to International Standard of Industrial Classification.
- To examine the relationship between economically active population and economic growth in Nepal.
- To analyze the indicators of economic development related to level of living of population in Nepal.

Significance and limitation of study

Empirical studies related to population and economic development are lacking in Nepal. This paper contributes to Nepalese economic studies exploring the productivity of economically active population according to ISIC division and examining the empirical relationship between economically active population and GDP of Nepal. It also explores population related and non related determinants of economic growth in Nepal. These are new attempt to Nepalese studies. Hence it is a contribution to Nepalese studies. Further it is useful to both policy makers and students.

This paper is built up on the belief that economic growth is prerequisite of economic development. It considers only indicators of level of living aspect of development such as per capita income, literacy rate, infant mortality rate, fertility rate, death rate, birth rate, life expectancy, maternal mortality rate, and people below the poverty line. It does not consider the case of self esteem and freedom from servitude aspect of development. It does not consider employed and unemployed population but considers Economically Active Population (EAP). EAP is assumed to be labour force of the economy.

Theoretical foundation

Population theory: Malthus (1978) put forward the theory of the relationship between population growth and economic development. Malthus postulated that population is growing at the geometric rate; at the same time based on principle of diminishing return on fixed factor land, food supply could be expanded at roughly at arithmetic rate. Each member of growing population would have less land to work so his marginal contribution to food production declines. Growth of food supply could not keep pace with growth of population so per capita income (per capita food production in agrarian society) declines to subsistence or slightly above the subsistence level. A way to avoid the chronic low level of living is to practice the "moral restrain" by the people that limits the numbers children and hence the total population. Another natural way to check the growing population is positive check- starvation, disease, wars etc.

Modern economists have given the name-*low level equilibrium population trap* or *Malthusian population trap* to the subsistence level of living. If income is growing faster than the population growth, per capita income will increases and vice versa. But operation of diminishing return on land, income could not grow at faster rate than population forever. So subsistence level was envisaged. Further the theory assumes that higher per capita income leads to higher population and vice versa.

According to neo -Malthusian, poor nation will never be able to rise above the subsistence level of per-capita income unless the preventive checks such as birth control are initiated. On the absences of such checks Malthusian positive checks come into operation (Todaro, 1997).

Critics argue that Malthusian theory of population ignores the impact of technological progress on income growth. Technological innovation shifts the income growth curve in upward direction and income growth may exceed the population growth which in turn increases the per capita income. Thus countries can escape the population trap. Real world experience also shows the increasing trend of per capita income. The technological progress may result in even increasing return to scale in production rather than the decreasing return to scale. Second weakness of the theory is that it exclusively focuses on relationship between per capita income and population growth. Critics argue that individual level living is the primary determinant of family's decision to have numbers of children (Todaro, 1997).

Growth theory: Economic growth is the prerequisite of economic development. Without growth development may not be attained. Solow- Swan model is highly celebrated growth theory. It is based on Solow (1956) and Swan (1956).The model assumes that capital and labour are the basic determinant of national output. Production function is assumed to be homogeneous of degree one. Labour force is the major part of population thus population matters for output growth and hence economic development. Generally increase in population is related to increase in labour force.

The model in per capita term states that output per head of labour force is the function of capital per head of labour force. More clearly per capita output depends up on per capita capital. Higher the per

capita capital higher will be the per capita output and vice versa. Basic determinants of steady state equilibrium growth are saving rate, population growth rate, depreciation of capital and technological progress. Basic conclusion of the model is that higher the saving rate higher will be the per capita income, higher the population growth lower will be the per capita income, higher the depreciation rate lower will be the per capita income and finally and more importantly positive advancement in technology leads to increase in per capita income (Barro & Martin, 2004).

Population and economic growth: A depth and rigorous analysis

The relationship between population and economic growth, as this researcher feels, could better be envisaged combining the population theory and growth theory. If population growth increases the labour force of the economy, it may increases the total output of the economy and hence the economic growth and development. Labour force is the one of the basic factor of production. A major indicator of economic development is per capita income. A proxy variable of per capita income may be taken as output per head of labour force. Per capita production function states that output per head of labour force can be increased by increasing capital per head of labour force. Thus, growth and development is driven by capital per head of labour force rather than the absolute level of labour force.

Experience of real world reveals that technological progress is the prime determinant of economic growth. It increases the steady state equilibrium value of output per head of labour force in Solow and Swan Model. The critics of the Malthusian theory of population also states importance of technological progress to escape the *low level of equilibrium trap* in Malthusian model. Thus any relationship between population and economic growth cannot be examined precisely without considering the case of technological advancement.

It is very complex to derive the relation between total population and economic development. Total population includes dependent population such as children, old age people etc and economically active population. Economically active population can positively contribute to economic growth. But the growth impact of dependent population may be negative. So relation between total population and economic growth may have positive or negative. A clear picture could be derived from relationship between economically active population and economic development. Growth economics states that there is positive relation between economic growth and economically active population. However,growth in output per head of labour force (per capita income growth) depends upon capital per head of labour and growth rate of labour.

Selected social indicators and economic development

Economic development is very broad concept. It includes the basically three elements- raising people's level of living, creating conditions conductive to the growth of people's self-esteem,and increasing people's freedom by enlarging the choice variables (Todaro, 1997, 16-18). This definition is very broad and quite complex to transform in operational definition. Thus, economic development in this paper is confined to first component. The indicators of level of living are per capita income, peoples below the poverty line, education (literacy rate), death rate, infant mortality rate, maternal mortality rate, life expectancy at birth, birth rate and fertility rate.

Methodology

Generation of stock of capital

Data for stock of capita is lacking in Nepal. So, total stock of capital is derived from gross fixed capital formation (GFCF) of Nepalese economy using the Perpetual Inventory Method. Gross fixed capital formation figures are converted in to real figures using the GDP deflator. Separate deflator of GFCF was not available. GFCF is considered as gross investment.

Let us consider,

$K_t = K_{t-1} + In_t$ ....(1)

Where,

K_t = Net stock of capital at period t

K_{t-1} = Net stock of capital at period t-1

In_t = Net investment in period t

Part of current investment used to replace the depreciated stock of capital is known as replacement investment (D). Gross investment is the sum of net investment and replacement investment so equation (1) can be written as

$K_t = K_{t-1} + Ig_t - D$......................................(2)

Here, Ig_t is the gross investment or gross fixed capital formation. Let us assume that Depreciation or replacement investment is constant proportion (λ) to last year's stock of capital.

So,

$K_t = K_{t-1} + Ig_t - \lambda K_{t-1}$

Or, $K_t = Igt + \psi K_{t-1}$....................................(3)

Where, $\psi = 1 - \lambda$

Capital series is derived from equation (3) given the value K_{t-1} and λ. More clearly λ is the depreciation rate. It is assumed to be six percent as assumed by Gyanwaly(2014).

Estimation of initial stock of capital

The figure of Initial stock of capital is not available in Nepal. So it is estimated by estimating the accelerator coefficient of investment and assuming that at steady state equilibrium incremental capital output ratio (ICOR) is equal to actual capital output ratio(ACOR). More clearly,

K1975 = ICOR * Y1975................................... (4)

Here, Y1975 is the real GDP at factor cost in 1975. The ICOR is estimated by OLS methods using the data series of 1975 to 2011.

Definition of variables

Economic growth: Annual growth rate of real per capita income or annual growth rate of real GDP is also known as economic growth.

Labor force: Economically active population is taken as labour force of the economy.

Sources of data

Economic survey: GDP at factor cost, GDP deflators, GNP,government expenditure, government consumption, gross fixed capital formation,gross domestic saving and gross national saving.

Quarterly economic bulletin: Total trade, consumer price index.

National population census reports: Total population, economically active population, economically active population by ISIC division and other as specifiedin the text

CBS: GDP of ISIC division between the periods 1971-2011, GDP deflators. GDP figures are compatible with*economic survey* for period (1975-2011).

Population monograph (CBS) (1995, 2003): Literacy rate, crude birth rate, crude death rate and Infant mortality rate for the period (1971-2001); and life expectancy at birth (1971-1991).

Nepal in figure (CBS) (2012)**:** life expectancy at birth for 2001, Infant mortality rate for 2011

Nepal living standard survey (I, II, III) (CBS): People below the poverty line.

Sample period

Generally sample size is takenas 1971- 2011. When the data are unavailable it has been reduced to the period1975-2011.

Conversion in real figure

GDP of ISIC divisions are converted in to real figure using their corresponding deflators. Nominal GDP is converted in to real using implicit aggregate deflator. Nominal capital stock is converted in to real using GDP deflator.

Structure of output and population

To examine the nature of structure of output and structure of economically active population and output and EAP are divided in to nine ISICs , converted in to real form and compared using table, ratio, percent etc.

Relationship between production and population

To examine the relation between population and economic development a aggregate production

Function is assumed for the national economy that is

$$Y=AK^{\alpha}L^{\beta}e^{u}\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(6)$$

Where,

Y= Real output; K= Real stock of capital; L=Labour force (economically active population)

The function is tested for constant return to scale. Once constant return to scale is assumed following type of per capita function is estimated.

As the constant return to scale is accepted the following type per capita production function is estimated.

$y = A\, k^{\alpha} e^{u}$……………………………………..(7)

Where,

y = Per capita output or output per worker
k = Per capita capital or capital per workers
A, α = Parameters

After log transformation the model can be written as,

$\ln y = \ln A + \alpha \ln k + u$……………………….(8)

We estimate the equation (8) by OLS method. So the TFP growth function is estimated as follows.

$TFPG = \Delta \ln y - \alpha \Delta \ln k$………………………(9)

Here Δ stands for change and ln stands for natural log.TFP growth is the residual part of annual growth rate of output which is not explained by capital and labour(Thirlwall,1999). It is based on idea of Solow (1957).To examine the effect of variables related to population such as life expectancy, literacy rate, fertility rate etcon output growth researcher attempts to estimate the following equation.

$TFPG = a_0 + a_1 Dlnp(-1) + a_2\, Dlnrx + a_3 Dlntopen + a_4 Dlnlexp + a_5 Dlnferti + a_6 Dlnlite(-1) + a_7 Dlngepy + a_8 Dlngcy + u$…………………………(10)

Where,

topen= Total trade to GDP ratio
p = Consumer price index
gcy =Government consumption to GDP ratio
gepy= Government expenditure to GDP ratio
rx= Real export
lexp= Life expectancy at birth
ferti= Fertility rate
lite= Litracy rate

The expected sign are $a_1<0$, $a_2>0$, $a_3>0$, $a_4<0$ or >0, $a_5<0$, $a_6>0$. $a_7>0$, $a_8<0$. Note that D stands for first differences and **ln** for natural logarithms.

Within the domain of these explanatory variables, while estimating this equation, combination of these variables is altered to get better fitted equation, which is free from violation of OLS assumption and estimated coefficient are statistically significant.

3.2. Structure of national output and economically active population

3.2.1 National scenari of GDP growth rate and population growth rate

The decade wise growth rate of population and growth rate of real output is shown in Table 3.1. Economic growth rate was maximum in 1980s decade. Population growth rate was highest in 1970s decade. Is there any relation between population growth rate and economic growth rate? Table 3.1 shows that population growth rate was declining from 1970 to 1980 and average annual GDP growth rate was increasing in that time period. Similarly average annual growth rate of population was increasing from 1980 to 1990 but GDP growth rate was decreasing. These findings show that there is negative relation between population growth rate and economic growth rate in Nepal. However the result of 2000s decades is not matching.

Table 3.1: Growth rate of real GDP and population

Periods	Average annual growth rate of real GDP at FC (%)	Average annual growth rate of Population (%)
1970/71-1979/80	3.34	2.62
1980/81-1989/90	5.05	2.08
1990/91-1999/00	4.95	2.25
2000/01-2010/11	4.69	1.35

Source: Author's derivation based on data of CBS. Note: Single deflator is used to derive the growth rate of realGDP.

Real GDP growth depends upon many other factors not only in population growth rate. So a contradictory result may be observed in 2000s decade.

3.2.2 Structural transformation of nominal GDP at factor cost

There has been rapid transformation of the economy during the past four decades. Contribution of agriculture sector to GDP was 67.51 percent in 1971 and it is gradually declining and reaches to 36.58 percent in 2001. Contribution of this sector total GDP at factor cost remains more or less stable during 2001-2011 decade and reaches to 36.83 percent. It means that economy is diverting from agriculture to non agricultural sectors. The mining and quarrying sector contribution to GDP remained less than one percent over the last four decades. Economic activities related to mining and quarrying in Nepal are very limited.

Manufacturing sector is considered as backbone of the economy in developed countries. On the basis of ten years interval figures, its contribution to total GDP remains in between 9.15 to 4.12 percent. In 1971 to 1981, its contribution has declined from 9.15 percent to 4.12 percent. Its contribution to GDP had increased to 6.8 percent in 1991; it further increases to 9.03 percent and then it starts to decline and reaches to 6.20 percent. In recent years, it has been serious concern of declining contribution of manufacturing sector to GDP.

The contribution of electricity, gas and water sector remained negligible over the past four decades and was less than 2 percent. However contribution of construction sector was growing from 1.51 percent to 9.54 percent between 1971 to 1991 and then declines to 6.01 percent in 2001. It slightly increases to 6.88 percent in 2011. On the whole, industry sector contribution reaches to 15.47 percent in 2011 from 10.89 percent in 1971. There was very sluggish progress in this sector.

Table 3.2: Structural transformation of nominal GDP (in percent)

ISIC Division	Percentage share of GDP at FC by ISIC Division				
	1971	**1981**	**1991**	**2001**	**2011**
Agriculture Fishery and Forestry	**67.51**	**60.9**	**47.68**	**36.58**	**36.83**
Mining and Quarrying	0.01	0.23	0.5	0.43	0.54
Manufacturing	9.15	4.12	6.8	9.03	6.2
Electricity Gas and Water	0.22	0.26	0.7	1.82	1.85
Construction	1.51	7.75	9.54	6.01	6.88
Industry	**10.89**	**12.36**	**17.54**	**17.29**	**15.47**
Trade Hotels and Restaurant	3.56	3.74	11.11	18.42	15.43
Transport and Communication	2.62	7.42	5.65	7.39	8.15
Finance and Business Services	9.89	8.16	9.42	10.98	12.04
Personnel Community Services and Others	5.53	7.42	8.6	9.34	12.06
Service	**21.6**	**26.74**	**34.78**	**46.13**	**47.68**
Total	**100**	**100**	**100**	**100**	**100**

Source: Author's derivation based on nominal GDP data of CBS

In service sector, contribution of trade hotel and restaurant; Transport and communication; finance and business service; and personal and community service and other are gradually increasing. Highest level of contribution is appearing from trade hotel and restaurant sector. There has been fivefold increase in its contribution since 1971 to 2011. On the whole there has been rapid increase in contribution of service (territory) sector to total GDP. Its contribution becomes more than double since 1971 to 2011.

3.2.3 Structural transformation of economically active population

There may have been structural shift of economically active population over the past four decade.

Table 3.3: Structural transformation of economically active population

ISIC Division	Economically active population				
	1971	**1981**	**1991**	**2001**	**2011**
Agriculture Fishery and Forestry	4579552	6244289	5961788	6504689	6,355,735
Mining and Quarrying	36	971	2361	16048	26,026
Manufacturing	51902	33029	150057	872253	559,282
Electricity Gas and Water	1596	3013	11734	148218	25068
Construction	5016	2022	35658	286418	335,827
Trade Hotels and Restaurant	63560	109446	256012	984662	833,725
Transport and Communication	9637	7424	50808	161638	256,523
Finance and Business Services	3466	9850	20847	76687	184,324
Personnel Community Services and Others	137759	313570	780023	827189	1110502
Not stated	0	127272	70298	22395	242549
Total	**4852524**	**6850886**	**7339586**	**9900197**	**9929562**

Source: National Population Census Report, CBS (various Issues).

To examine this feature, Table 3.3 present the economically active population of the census year 1971, 1981, 1991, 2001 and 2011 in the nine ISICs as in the case of GDP. This table shows the amount of economically active population in nine economic sectors (ISICs). During the course of information collection in census, some of the populations which are economically active but are not identified in any of the nine sectors of ISIC are known as “not stated”. Absolute value of this population is shown in Table 3.3.

How many EAP are involved in each of the nine sectors? Are these populations shifting from one sector to another sector? To answer this question the EAP of nine sectors are expressed in percentage form. For the sake of simplicity these nine divisions are further divided in to three broad sectors namely agriculture, industry, and service.

Table 3.4: Structural transformation of economically active population (percent)

ISIC Division	Percentage of economically active population				
	1971	**1981**	**1991**	**2001**	**2011**
Agriculture Fishery and Forestry	**94.375**	**91.146**	**81.228**	**65.703**	**64.008**
Mining and Quarrying	0.001	0.014	0.032	0.162	0.262
Manufacturing	1.07	0.482	2.044	8.81	5.632
Electricity Gas and Water	0.033	0.044	0.16	1.497	0.252
Construction	0.103	0.03	0.486	2.893	3.382
Industry	**1.207**	**0.57**	**2.722**	**13.362**	**9.528**
Trade Hotels and Restaurant	1.31	1.598	3.488	9.946	8.396
Transport and Communication	0.199	0.108	0.692	1.633	2.583
Finance and Business Services	0.071	0.144	0.284	0.775	1.856
Personnel Community Services and Others	2.839	4.577	10.627	8.355	11.184
Service	**4.419**	**6.427**	**15.091**	**20.709**	**24.019**
Not stated	0	1.858	0.957	0.226	2.443
Total	**100**	**100**	**100**	**100**	**100**

Source: Author's derivation based on National population census report, CBS (various Issues).

As in the case of production activities, there is rapid decline in EAP in agriculture sector. In 1971, 94.37 percent EAP were involved in agriculture sector but in 2011 it declined to 64 percent. The decline was gradual. The involvement of the population in mining and quarrying was less than one percent over the four decades. The involvement in manufacturing sector was less than three percent up to 1991 and there is some increment after 2001.On the aggregate involvement of EAP in industrial sector was less than three percent up to 1991and reaches to 13.36 percent in 2001 and then decline to 9.52 percent. Within the service sector, EAP s gradually increasing in trade hotel and restaurant, transport and communication, finance and business services, and personal community services. Three was more than 5 fold increment of EAP in service sector. There was just 2.2 fold increment in service sector's GDP but EAP was increasing by 5.46 fold over the past four decades. Meaning that, EAP was growing at faster rate than the output in service sector. In conclusion the EAP was gradually shifting from agriculture to industry and service sector. Service sector growth was faster than industrial sector.

3.2.4 Nominal GDP at factor cost per-economically active population

What is the productivity of EAP in each ISIC? How much nominal output is generated by one unit of EAP? To answer these questions Table 3.5 present perhead nominal GDP out of EAP for each ISIC and for the year 1971, 1981, 1991, and 2011. These per capita GDP of EAP are also defined as productivity of labour.

Table 3.5: Per capita nominal GDP at factor cost of economically active population

ISIC Division	GDP at fc per EAP (current prices) in Rs.				
	1971	1981	1991	2001	2011
Agriculture Fishery and Forestry	1317.6	2483.9	9287.1	23925.0	75231.1
Mining and Quarrying	27777.8	59732.2	243540.9	113222.8	267271.2
Manufacturing	15760.5	31760.0	52606.7	44034.2	143990.0
Electricity Gas and Water	12531.3	22237.0	69456.3	52285.2	957435.8
Construction	26913.9	976261.1	310673.6	89328.9	266077.5
Trade Hotels and Restaurant	5003.1	8707.5	50396.1	79608.4	240322.6
Transport and Communication	24281.4	254445.0	129113.5	194413.4	412571.2
Finance and Business Services	255049.0	210862.9	524967.6	609261.0	848218.4
Personnel Community Services and Others	3586.0	6024.2	12808.6	48035.6	141020.0
Total	**1841.9**	**3717.2**	**15822.0**	**42974.3**	**130734.9**

Source: Author's derivation based on the data of CBS
Note: Economically active population not stated the industries are included in total but not in the nine divisions.

The overall productivity of EAP was NRs 1841.9, 3717.2, 15822, 42974.3 and 130734.9 in 1971, 1981, 1991. 2001 and 2011 respectively. Nominal values of productivity of EAP are increasing but the case of real productivity will be examined latter on. For instance, in 1971, first highest level of productivity of EAP appeared in finance and business sector, second highest level in construction, third in transport and communication and so on. The minimum level of labour productivity appeared in agricultural sector. Agricultural production basically based on labour intensive technology. Ninety four percent of the EAP engaged in agriculture sector but its productivity wasjust NRs 1317.6 - the minimum of nine ISICs. Among the others, one of the reasons of diverting EAP from agriculture to other sectors may the low productivity of labour in agriculture sector.

Another very interesting finding is that finance and business sector contributes 9.89 percent to total GDP and productivity of labour is highest in this sector. Similar types of interpretation may be advanced for the subsequent periods. The relative productivity of economically active population can be analyzed from nominal per-capita figure shown in Table 3.5.

3.2.5 Real GDP at factor cost per economically active population

Whether the productivity of economically active population is increasing over time or not? To answer this question, real (inflation adjusted) figure are presented in table 3.6. In agriculture sector productivity is declining from 1971 to 1981. But after the 1981, its value is increasing. The productivity of EAP in mining and quarrying sector has been gradually increasing since 1971to 2001. But in 2011 productivity is slightly decreasing. Picture of manufacturing sector is not so systematic. From 1971 to 1981 production per head of EAP was increasing.

Table 3.6: Per capita real GDP at factor cost

ISIC Division	GDP at fc per EAP (constant prices) in Rs				
	1971	**1981**	**1991**	**2001**	**2011**
Agriculture Fishery and Forestry	15064.2	13733.7	19203.3	23925.0	33794.2
Mining and Quarrying	354304.3	425538.9	502760.3	113222.8	101321.8
Manufacturing	192040.4	216149.9	104571.9	44034.2	74958.6
Electricity Gas and Water	316040.0	313236.4	339917.2	52285.1	541088.2
Construction	326029.6	6605388.7	644347.7	89328.9	110551.0
Trade Hotels and Restaurant	62774.0	61021.3	105661.0	79608.4	103801.6
Transport and Communication	286643.9	1677699.8	311936.5	194413.4	224167.0
Finance and Business Services	32,58989.9	15,04912.2	11,88152.8	6,09261.0	4,07201.4
Personnel Community Services and Others	37,836.5	35,502.0	22,582.1	48,035.6	75,836.0
Total	**21858.1**	**22450.5**	**33523.7**	**42974.3**	**61770.6**

Source: Author's derivation based on data of CBS

It start to decline from 1991 and reaches to minimum level in 2001. There is some sign of improvement in 2011 because the productivity is increasing. Output per head of EAP is gradually increasing in electricity gas and water, and construction sectors. Improvement in technology may have lead to this consequence. There is no any uniform trend in the productivity of EAP (labour) in trade hotels and restaurant sector. Similar case holds true in transport and communication. Output per head of labour in finance and business sector is gradually decreasing since 1971 to 2011. The real productivity of EAP is gradually decreasing up to 1991 and then starts to increase. Productivity of EAP in the overall economy is gradually increasing from 1971 to 20011. Increasing stock of capital, improved knowledge, improved human capital, advancement in technology, etc may have lead to increase in productivity of labour in the economy over the last four decade.

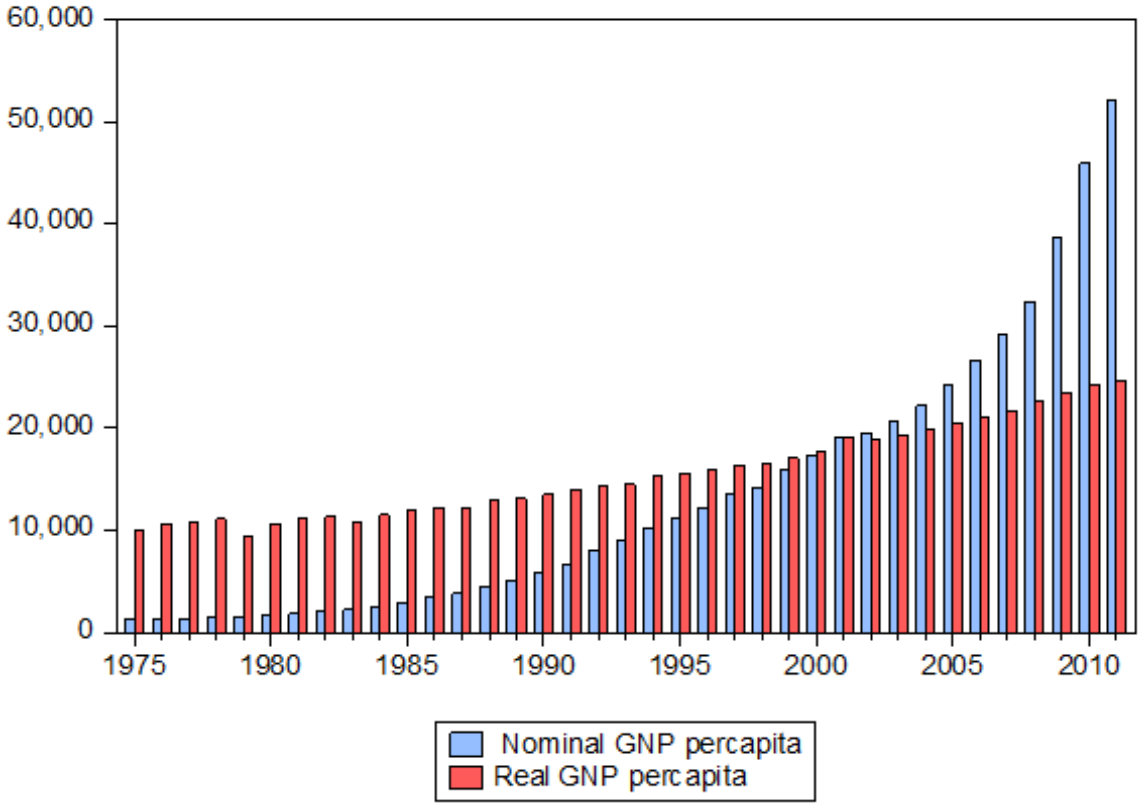
3.2.6 Per capita GNP: out of total population

A very popular indicator of economic development is the per capita income. Generally higher per capita income is associated with higher standard of living of the people. Nominal and real per capita income, out of total population, is shown in figure 3.1. For any point of time, to make the comparison among the cross section observation, nominal per capita income may be the better measure. However, for the long run analysis, real per capita income may be a better measure. The real per capita income presented here is derived from using single deflator spanning the time period 1975 to 2011 with base year 2001. The deflator is shown in Appendix I.

The data of real per capita GNP presented here may be different from economic survey because the survey uses three deflators, each having different base year. Unlike that this researcher uses a single deflator with single base year 2001. This reality is also seen from the graph that in 2001 nominal and

real per capita GNP are equal. Real per capita income is growing at very sluggish rate that is 2.5 percent per annum. During the last 37 years real per capita income increases by just 2.46 times!

Figure 3.1: Real and nominal GNP per capita



Source: Author's construction based on data of CBS

During the same time period real GNP increases by 5.08 times, gross fixed capital formation increases by 8.09 times, real GDP by 5.03 times, EAP increases by 5.48 times. Despite the many fold increment in real GNP, real gross fixed capital formation, real GDP, and EAP, per capita income increases by just 2.46 times because higher growth rate of population swipe out the effect of many fold increment in other real variables.

Table 3.7: Summary of real and nominal per capita income (1975-2011)

Per capita income	Mean	Maximum	Minimum	Std. Dev.	C.V.
Nominal GNP per capita Rs.	13295.67	52180.75	1301.11	13248.15	99.64259
Real GNP per capita Rs.	15566.42	24654.75	9333.849	4476.601	28.75806

Source: Author's derivation based on data of CBS. Note: C.V.= Coefficient of variation

Summary statistics of nominal and real GNP per capita is shown in table 3.7. Real GNP per capita is moving within the limit of NRS 9333.8 and 24654.7. The coefficient of variation shows that there is less variability in real GNP per capita than in nominal GNP per capita.

3.2.7 Economically active population and economic growth

EAP may have very close link with real economic growth. To examine this feature percentage of EAP in total population in each Census and decade wise average annual growth rates of real GDP are plotted in Table 3.8. The percentage of EAP in 1981 was 45.6 percent and it decreased to 39.7 percent in 1991. It was the case of 1980s decade (1981 to 1991).

Table 3.8: Economically active population and economic growth

Year	EAP	Population	Percent of EAP	Decade	Average Annual Real GDP Growth Rate
1971	4852524	11555983	41.9		
1981	6850886	15022839	45.6	1972-81	3.8
1991	7339586	18491097	39.7	1982-91	4.8
2001	9900197	23151423	42.8	1992-01	5.6
2011	9929562	26,494,504	37.5	2002-11	3.7

Source: CBS and authors calculation
Note: Growth rate are calculated using single deflator

Average annual real GDP growth rate has increased to 4.8 percent in this decade (1982-91)from 3.8 percent in previous decade (1972-81). The share of EAP in total population has decreased but growth rate of GDP has increased. This result is quite contradictory with theory. However in 1990s decade the share of EAP in total population has increased to 42.8 percent. The average annual real GDP growth rate has also increased to 5.6 percent in that decade. Share of EAP has declined to 37.5 percent in 2011. The real GDP in 2000s decade (2002-2011) has also further declined to 3.7 percent. If we ignore the case of 1980's decade, there is positive relationship between EAP and economic growth. Economic growth is impacted by many other factors. So other factors may be responsible to explain the growth process of 1980s decade. Whether EAP has growth impact on real GDP is empirically examined in section 3.3.

3.3. The empirical relationship between population and economic growth

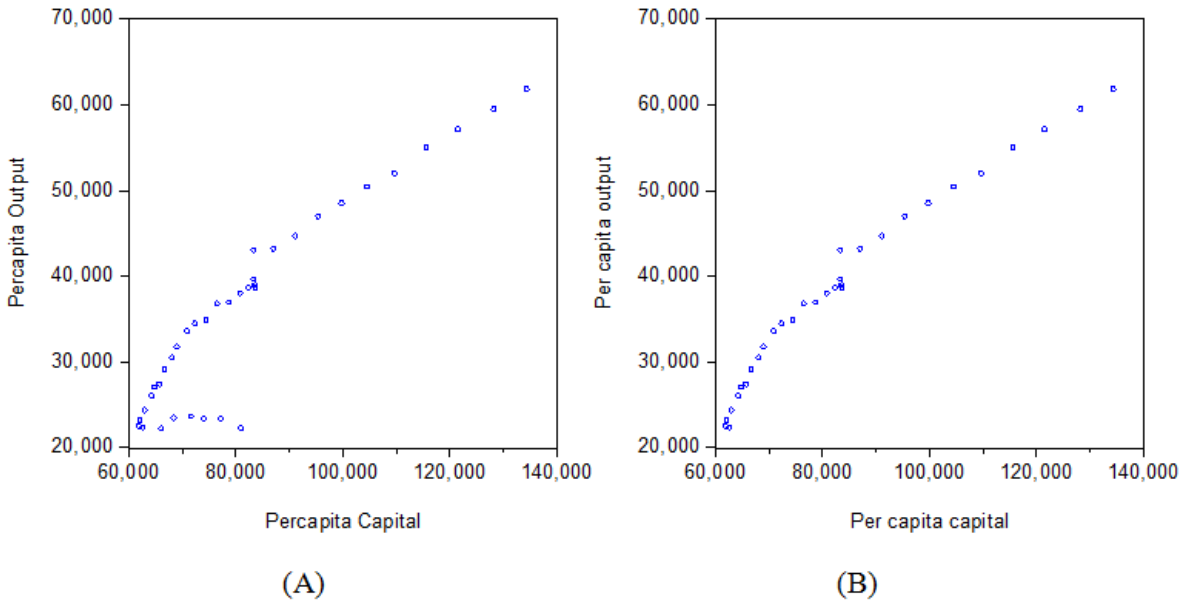
3.3.1 Per capita production function and economically active population

Economic growth has very close link with EAP. It is a basic factor of production. Increase in working labour force generally increases the output or income of the economy. But economic growth and development basically focus on increase in per capita output. Another factor of production is capital. Output may increase with the increase in labour and capital but it does not ensure the increase in per capita output. Keeping in view this very phenomenon, an aggregate per capita production function for Nepalese economy is estimated and is shown in appendix III.

The estimated elasticity coefficient of per-capita production function is 1.031. It means that one percent increase in per capita capital leads to 1.03 percent increase in per capita output. Thus per-capita capital and per capita output are directly and positively related. Per capita capital does matters in Nepal. Per capita capital can be increased either through increase in capital stock or decrease in labour force or the both. For the developing country like Nepal both the options are desirable. Note that elasticity coefficient is different from capital output ratio. Capital output ratio shows the amount of capital required to produce one unit of output. But, how much will be percentage increase in per capita out put if per capita capital increases by one percent? The answer to this question comes from elasticity coefficient.

The closeness of the relationship between per-capita capital and per-capita output can be envisaged from the Figure 3.2. The graph shows the relationship between per capita capital and per capita output. The figure shows very close relationship between per capita capital and per capita output. The relationship is similar to production function. The six observations in panel (A) are quite odd it may be the consequences of initial values of capital stock and depreciation rate. It takes certain time to smooth out the values of capital stock once initial stock of capital is estimated and certain level of depreciation rate is assumed. Ignoring the first six initial observations the graph is plotted in panel (B). The panel (B) looks similar to production function.

Figure 3.2: Per capita capital and per capita output



Source: Author's derivation

The ongoing analysis concludes that per capita capital is the main determinants of per capita output. Thus economic growth and development primarily depends upon per capita capital. To achieve growth in per capita output Nepal has to increase the capital stock at faster rate than the rate of increase in EAP. Thus population matters for economic development.

3.3.2 Factors affecting the total factor productivity in Nepal

Increase in per capita capital increases the per capita output. There are also others factors (exogenous?) which increase the per capita output even the per capita capital is in same level. This is the technological

progress. The positive technological progress shifted the per capita production function in upward direction thus economy attains higher level of per capita output. How can we measure the contribution of technological progress? It can be measured through Total Factor Productivity (TFP). TFP can be increased through demographic factors as well as other real innovations. For instances, increases in education and training increases the productivity of labour and capital and hence the TFP. Using the elasticity coefficient (1.031) of Appendix 3.3, as described in methodology, the growth in TFP is estimated. The nature of TFP growth is shown in Appendix 3.3. To examine the effect of demographic and other variables in economic growth, a TFP equation is estimated by OLS method and shown in Appendix 3.3. The major factors affecting the TFP growth and hence the economic growth in Nepal are as follows.

Trade openness: The result of Appendix 3.3 shows that trade openness has no any significant impact in TFP and so in economic growth in Nepal. The sign is positive but it is statistically insignificant. Developed countries are more competitive in trade so trade openness may have positive impact in economic growth but in Nepal it does not appear. Note that trade deficit has been increasing in Nepal since it adopted the trade liberalization policy particularly from 1990.

Life expectancy: The result of appendix 3.3 shows that life expectancy has negative impact in TFP growth in Nepal. Theoretically it may have positive and negative impact in economic growth. If the increase in life expectancy improve the health condition of working population, it will increase the productivity of labour and hence the economic growth. If it increases the total size of the population, than it may have negative impact. It does not mean that government should design policies to decrease life expectancy at birth. Increase in life expectancy is a good sign of economic development. Increase in population should be controlled by other measures.

Fertility rate: Fertility rate is negatively affecting the TFP but it is statistically insignificant in Nepal. Thus effect of fertility on TFP is not clear in Nepal. Estimated coefficient has expected sign. Theoretically increase in fertility rate increases the total size of population/labor force which in turn may decreases the per capita output.

Literacy rate: Other variable positively affecting the economic growth is literacy rate. Estimated coefficient of literacy rate is significant at one percent or better level (see Appendix 3.3). Increase in education status of the people increases the skill of workers and hence increases the productivity. Higher productivity leads to higher growth. Thus education increases the TFP.

Inflation: Other factor affecting the TFP growth is inflation (DlnP). Estimated result of Appendix 3.3 shows that Inflation is negatively affecting the economic growth in Nepal. Estimated coefficient of inflation is statistically significant. Inflation erodes the purchasing power of people hence it has negative impact in growth.

Real export: Estimated equation of Appendix 3.3 shows that growth in real export is positively affecting the TFP growth in Nepal. The estimated coefficient is statistically significant and its impact is 10.4 percent. Thus export in Nepal positively driving the economic growth in Nepal. Increase in export gives incentive to the producers to expand the level of production and to adopt the advance level of technology hence it is growth friendly.

Government consumption to GDP ratio: The estimated result of Appendix 3.3 shows that effect of government consumption to GDP ratio in economic growth is not clear in Nepal. Estimated coefficient is

statistically insignificant. Theoretically, government consumption is a kind of unproductive expenditure which may not be growth friendly.

Government expenditure to GDP ratio: Estimated result of Appendix III shows that government expenditure to GDP ratio is positively affecting the economic growth in Nepal. Estimated coefficient is statistically significant. Increase government expenditure may be friendly for technological advancement along with increase in aggregate demand in the economy.

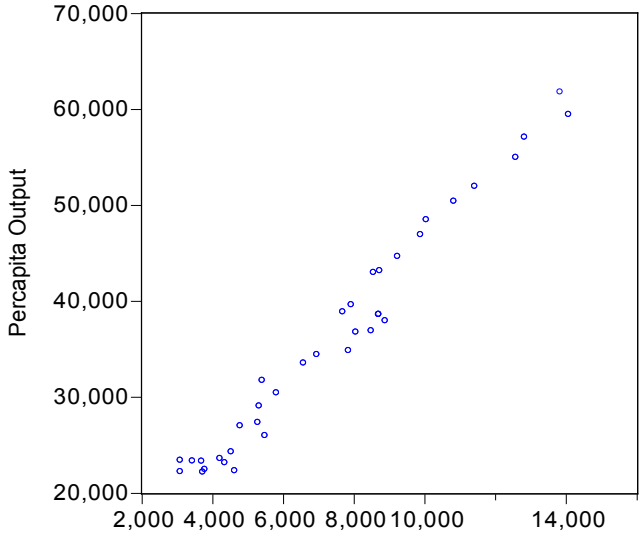
Thus, major sources of TFP growth in Nepal are inflation, real export, life expectancy, literacy rate,and government expenditure to GDP ratio. Thus, real stock of per-capita capital, real export, literacy rate, and government expenditure to GDP ratio are positively driving the growth process in Nepal. Inflation and life expectancy are negatively affecting the economic growth in Nepal. Economic growth and development is affected by both demographic and non-demographic factors in Nepal.

3.3.3 Per capita gross fixed capital formation and per capita output.

Capital stock is different concept than the gross fixed capital formation. It is a flow concept while capital is stock concept. Per capita terms are measured in term of EAP. As the Figure 3.3 shows that there is positive relationship between per capita gross fixed capital formation and per capita output. The graph shows very close relationship between per capita gross fixed capital formation and per capita income. This, relationship is different than relationship is observed in per capita production function shown in Figure 3.2. Here the relationship seems more linear. Conclusion is that population matters for growth and development because per capita variable depend upon size of population.

Figure 3.3

Per capita gross fixed capital formation and per capita output



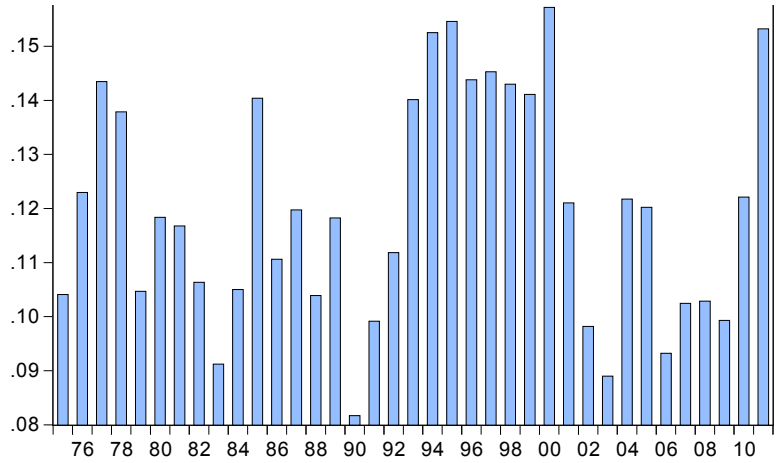
Source: Author's construction based on data of economic survey.

3.4. Other factors explaining the economic growth in relation to population

3.4.1 Domestic Saving

Domestic saving rate: A major factor affecting steady state equilibrium growth in Solow and Swan model is the propensity to save. Higher the rate of propensity to save higher will be the rate of investment and hence higher will be the growth rate. Here propensity to save is calculated on the basis of GDP at factor cost or Gross value added. It has been done because we have followed production function approach to growth analysis. The saving rate out of GDP at market price and GNP at market price will be different than the value estimated here. The pattern of propensity to save is shown in the Figure 3.4.

Figure 3.4: Propensity to domestic save



Source: Author's construction based on data of economic survey

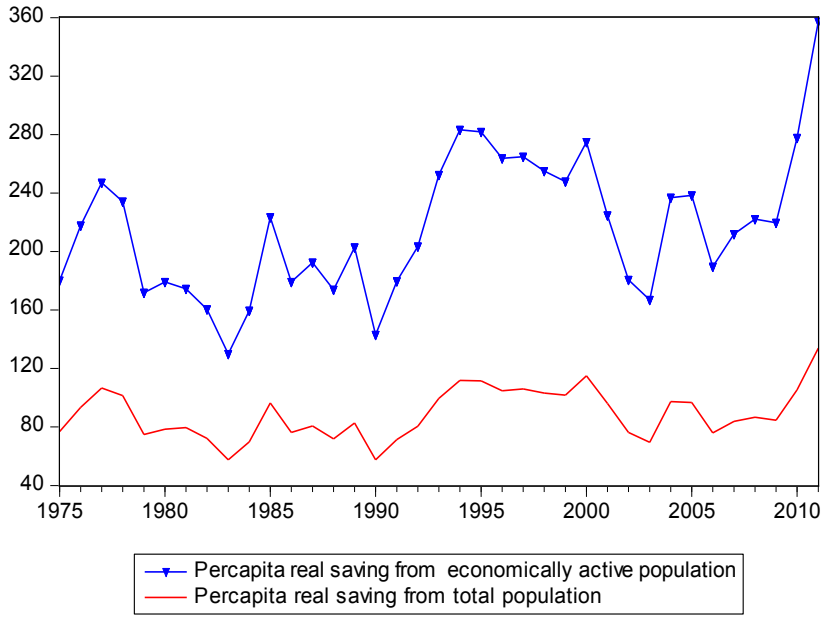
The graph shows that propensity save is fluctuating in between 8.2 percent to 15.7 percent and average level of propensity to save is 11.9 percent. Saving rate was minimum in 1990 and was relatively high in the decade of 1990s.

Real per capita domestic saving: Per capita output has close link with per capita saving. Higher the per capita saving higher will be the per capita investment and hence higher will be the per capita income or output. Per capita saving has been computed in two ways. Firstly per capita saving is calculated from EAP and secondly per capita saving is calculated from total population. The first type of saving is the saving per head of EAP and the second saving is the saving per head of total population. The pattern of saving is shown in Figure 3.5.

There is no any remarkable improvement in real per capita domestic saving in Nepalese economy. Both

the saving rates are roughly stationary. However the gap between per capita saving out of EAP and per capita saving out of total population indicates the effect of dependent population. Thus increase level of population depleted the per capita saving. Higher population is not friendly for per capita saving, per capita investment and per capita output.

Figure 3.5: Per capita real domestic saving



Source: Author's construction based on data of economic survey

The Table 3.9 shows the average, minimum and maximum value of propensity to save and real per capita saving. It shows minimum, maximum and average value of each variable. On the average over the period 1975 to 2011 saving rate is 11.9 percent, real per capita saving out of economically active population is 216.29 and out of total population is 88.87.

Table 3.9: Propensity to domestic save and per capita real domestic saving

Statistics	Propensity to save	Per capita real saving from economically active population	Per capita real saving from total population
Mean	0.119	216.29	88.87
Maximum	0.157	357.26	133.89
Minimum	0.082	129.89	57.56

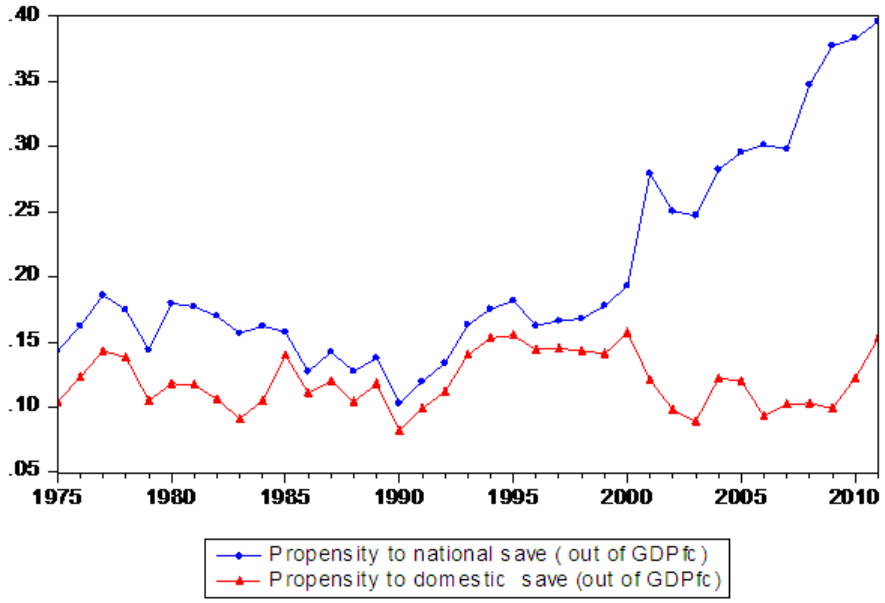
Source: Author's derivation based on data of Economic survey and Census report of CBS.

The graph shows that Nepalese economy is stagnating around their mean values per capita real domestic saving out of total population.

3.4.2 National Saving

Propensity to Save: National propensity to save is higher than domestic propensity to save in Nepal. The status of national propensity to save and the gap between national and domestic saving rate is shown in Figure 3.6. propensity to save are calculated on the basis of GDPfc. Domestic saving rate is stagnating between 8 to 16 percent level over the period 1975-2011.

Figure 3.6: National and domestic propensity to save

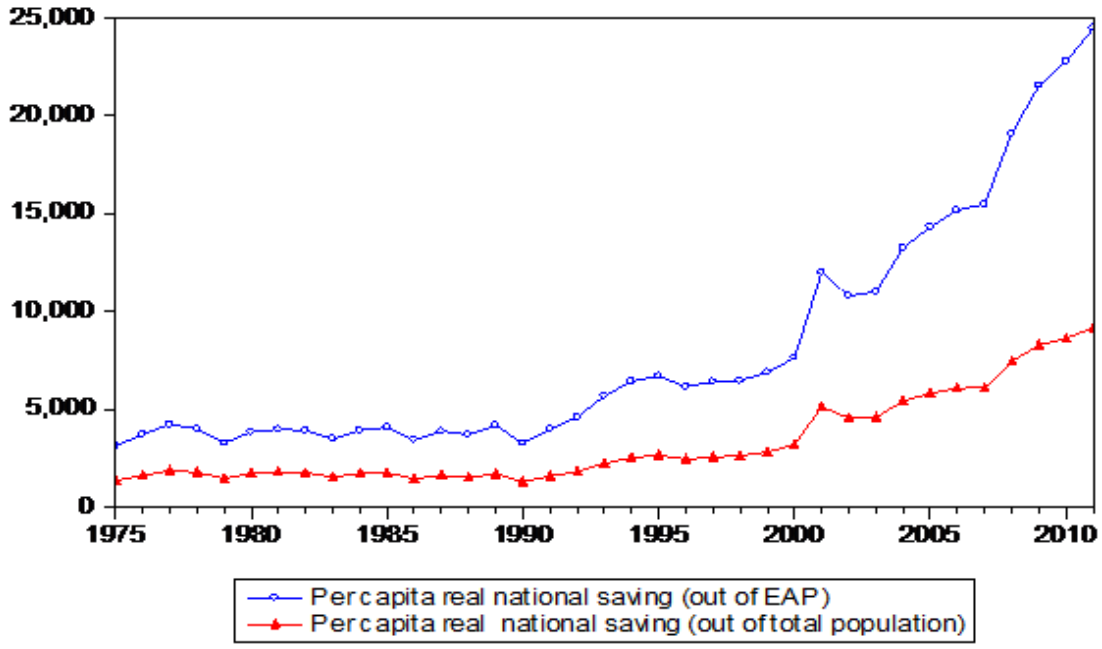


Source: Author's derivation based on data of economic survey

National saving rate is also stagnating between 10 to 19 percent level over the period 1975 to 2000 but it is always higher than the domestic saving rate. After 2000, national propensity to save is rapidly increasing and reaches to around 40 percent level in 2011 but domestic propensity to save could not get momentum of growth. The gap between national and domestic propensity to save was roughly constant up to 2000 but it is widening after 2000. Increasing inflow of remittance may be responsible for this widening gap.

Per capita real national saving: A major variable discussed in growth economy is the per capita real national saving. Per capita national real saving has been calculated in two ways- using EAP and total population.

Figure 3.7: Per capita real national saving



Source: Author's derivation based on data of economic survey

Trend and pattern of per capita real national savings are shown in Figure 3.7. Figure 3.7 states that both the per capita real savings were stationary up to 1990 and then start to increase over time. As the graph shows that per capita saving out of EAP is growing faster rate than per capita saving out of total population. Both types of per capita domestic savings were stationary over 1975- 2011 while national saving rate were not so after the 1990. Increasing inflow of remittances may be responsible for this increase in per capita national saving.

3.4.3 Population growth rate

There is no any systematic pattern of population growth in Nepal. The average annual rate of population growth was 2.62, 2.08, 2.25 and 1.35 percent in 1970s, 1980s, 1990s, and 2000s decades respectively (see Table 3.1). After 2001 there has been rapid decline in population growth of Nepal.

According to Solow -Swan growth model, rapid growth rate of population decreases the steady state equilibrium level of per capita capital and hence the per capita income of the economy. Increased growth rate of population increasing the size of population reduces the aggregate level of domestic saving because the consumption level of the economy increases. Larger part of income goes to feed the larger size of population so level of saving will be low. Saving may be reduced because of high dependency ratio. Lower saving leads to further decline in per capita saving, per capita investment, per capita capital and hence per capita income of the economy. This analysis assumes that country already has working labour force to produce potential level of output. On basis of time series data it may not be possible to test causality running from economic growth to growth rate of population because we have only four figure of population growth rates: 2.62, 2.08, 2.25 and 1.35 percent in 1970s, 1980s, 1990s, and 2000s decades.

3.5 The status of selected indicators of economic development

Economic development is related to level of living of the people. Increase in level of living is the increase in economic development. A prime indicator of level of living is the per capita income. Nepal has experienced sluggish grow thin real per capita GNP over the last four decade (2.6 percent on the average). The status of per capita income has already discussed in previous section. However the case of social indicators related to quality of life as well as the level of living were not addressed in previous paragraph. So they are analyzed here.

Literacy rate: Another major indicator of economic development is the literacy rate. Literacy rate is one of the indicators of education status of the people. The ability to read and write is known as literacy. Productivity of educated people is generally higher than uneducated people and can enjoy better level of living. Over the past four decades there has been remarkable increase in literacy rate. For instances in 1971 the overall literacy rate was 13.9 and it has been reached to 65.9 percent in 2011. Literacy rate has been increased by 4.74 times while real GNP per capita has been changed by 2.46 times. Adult literacy rate has also increased remarkably. The percentage of population of age 15 and over able to read and write is known as adult literacy rate. Thus, there has been improvement in quality of life in Nepal.

Fertility rate: The yearly number of children born a live per 1000 women with in child bearing age bracket (15-49). Fertility rate generally decline with pace of economic development. Higher fertility rate is associated with higher population growth. Higher population growth hinders the economic growth. The fertility rate over the last thirty years has been decreasing. There was a slight increase in fertility rate from 1971 to 1981.

Table 3.10: Selected indicators of economic development

Variables	1971	1981	1991	2001	2011
Literacy rate(all age but 6+)	13.9*	23.3 *	39.6 *	54.1 *	65.9p
Literacy adult(15+)	n.a	20.6 *	33.0 *	48.6 *	59.6p
Total fertility Rate	5.83b	6.39 b	5.16 b	3.8 b	3.52 p
Crude birth rate	43 b	45 b	38.7 **	30.5 **	21.8p
Crude death rate	19.5e	17.1f	13.3g	10.3h	7.3p
Infant mortality rate***	172	117	97	64s	46s
Maternal mortality per 100,000	n.a.	n.a.	850 m	415 m	229m
Life expectancy at birth(male)	42.1J	50.9 J	55 J	60.1 s	65.5 p
Life expectancy at birth(female)	40.0 J	48.1 J	53.5 J	60.7 s	68 p
Life expectancy at birth(Total)	n.a.	n.a.	n.a.	60.4 s	66.6 p
Population below the poverty line (%)	n.a.	n.a.	42k1	38 k2	25.2 k3

**=Karki,Y.B.(2003). Table 12.8, p.32
***= Regmi,G.& Dangol,B.D.S(. 2003), Table 13.2, p.39
*= Manandhar,T.B.& Shrestha,K.P.(2003). Table 6.14, p.146.
b= Karki,Y.B.(2003). Table 12.4, p.28.
e= Regmi,G.& Dangol,B.D.S(. 2003), Table 13.1, p.38 (1974-75).
f= Regmi,G.& Dangol,B.D.S(. 2003), Table 13.2, p.39(1977-78)
g= Regmi,G.& Dangol,B.D.S(. 2003), Table 13.1, p.38
h= Regmi,G.& Dangol,B.D.S(. 2003), Table 13.1, p.38(for the period 1999)
j= Regmi,G.& Dangol,B.D.S(. 2003), Table 13.6, p.42

k1= NLSS I k2= NLSS II k3= NLSS III
m= NPC (2013). p.45 (data for 1990.2000, and 2010)
p= CBS, Population Census, 2011.
s=CBS (2012),
λ= Manandhar,T.B. (1995). Table 17, p.379.

Crude birth rate: The number of children born alive each year per 1,000 population is known as crude birth rate. Crude birth rate of 25 means that 2.5 child are born out of 100 population. It is same as 2.5 percent increase. Higher the birth rate, higher will be the population growth. In developing countries like Nepal lower birth rate is preferable. People do like to have fewer children if life expectancy is high and death rate is low.

Crude death rate: It is the yearly number of deaths per 1,000 population. An annual crude death rate of 20 per 1,000 involves 2 percent of the population are died each year. The death rate in Nepal is declining. In 1971 the death rate was 19.5, it gradually decline in every decades, and finally reaches to 7.3 in 2011. Increase number of health facility, innovation in medical sciences, and eradication of some of the communicative diseases resulted in decline in death rare.

Infant mortality rate: Death among the children between the age of birth and one year per 1,000 live birth is known as infant mortality rate. It is the death of children that born alive within one year out of 1000 birth. It is the probability of survival to age one since birth. The infant mortality rate in 1,971 was 172, it gradually decline and reaches to the level 46 in 2011. Increasing number of health facility and immunizing system may be responsible for this improvement.

Maternal mortality: The maternal mortality rate is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy. It is the rate of death out of 100,000 such women. The maternal mortality rate in 1981 was 850, it continuously decline and riches to 229 in 2011. The maternal mortality rate in the last thirty years has declined 73.05 percent. Thus, probability of surviving pregnant women has been increased thus level of living of women has been improved.

Life expectancy at birth: The number of year's new born children would live is known as life expectancy at birth. Life expectancy of birth has been increased in Nepal. Improved food system (calorie), increased health facility, increased health awareness may be responsible for the increase in life expectancy. Average life time of a male people in 1971 was 42.1 years; it continuously increases and reaches to 65.5 years in 2011. Similar case holds true for female and total population. Up to 1991 life expectancy of male was higher than female but after the 1991 females life expectancy became higher than male. Increased average life time of the people is definitely improvement in quality of life and hence the economic development.

People below the poverty line: In 1991, 42 percent of the people were surviving below the poverty line. In 2001, 38 percent of the people were below the poverty line and in 2011 it has been declined to 25.2 percent. Thus,there has been progress in poverty reduction. Increase in per capita income does not guarantee that reduction in poverty because it has very close link with distribution of income. Poverty can be reduced even the per capita income is same, if the distribution of income becomes relatively equitable. Thus per capita income alone could not address the issues of economic development. Equitable distribution of income is another sign of economic development.

Over the last four decades there has been remarkable improvement in indicators of economic development that is related to level of living. Progress in education status, reduction in death rate, reduction in birth rate, increase in life expectancy at birth, and reduction in poverty are some of the major achievement of Nepalese economy though the growth aspect related to per capita income has been quite sluggish.

3.6 Conclusion

This paper examines the relationship between population and economic development. The structure of national output of the economy has been changing since 1971 to 2011. A large group of economically active population are diverting from agriculture sector to industry and service sector. Industrial sector could not get faster growth but the transformation rate to service sector is high. Similarly, economically active populations are also diverting from agriculture to non agriculture sector because productivity is low in agriculture sector and high in service and industrial sectors.

There is very close and statistically significant and positive relation between per capita output and per capita capital. Increase in per capita capital is necessary to increase per capita output in the economy. It can be increased either increasing the capital stock at faster rate than the increase in labour force, or decreasing the size of labour force given the stock of capital. Real per capita domestic saving is stagnating and could not get the momentum of growth. But, real per capita national saving is getting momentum of growth only after 1990.

Economic growth is driven by both -population related and non related factors. In population side, economically active population and literacy arte are positively driving the growth process of the economy while life expectancy has negative impact in growth. The effect of fertility rate is not clear. On other side, Government expenditure to GDP ratio, real growth in export and real capital stock are positively driving the growth process while inflation is decelerating the economic growth in Nepal.

Over the last four decades there has been remarkable improvement in indicators of economic development related to level of living of population which may be regarded as social aspect of economic development. Progress in education status, reduction in death rate, reduction in birth rate, increase in life expectancy at birth, and reduction in poverty are some of the major achievement of Nepalese economy. Average annual growth rate of real per capita GNP has been quite sluggish but positive.

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Appendix 3.1 Nominal GDP at Factor Cost (Millions of NRS)

Year	X1	X2	X3	X4	X5	X6	X7	X8	X9	GDPfc
1971	6034	1	818	20	135	318	234	884	494	8938
1972	7106	2	996	23	149	339	285	907	562	10369
1973	6578	3	971	29	153	336	347	942	610	9969
1974	8851	3	1282	28	163	374	422	979	706	12808
1975	11435	22	664	34	583	540	690	1095	903	15966
1976	11495	23	690	38	718	603	805	1171	1046	16589
1977	10389	26	736	39.2	1020	636.1	852	1412	1145	16255.3
1978	11616	20	794	42	1338	707	1093	1534	1277	18421
1979	13365	34	848	48	4200	724	2520	1613	1340	24692
1980	13520	42	936	60	1570	889	1541	1833	1495	21886
1981	15510	58	1049	67	1974	953	1889	2077	1889	25466
1982	17715	66	1243	82	2342	1068	1992	2366	2163	29037
1983	19082	85	1460	127	2377	1199	2129	2594	2591	31644
1984	22570	111	1816	158	2576	1520	2468	2937	2848	37004
1985	22761	193	2511	184	3761	4561	2679	3987	3803	44440
1986	27136	228	3253	327	4550	5622	3088	4728	4282	53214
1987	30623	257	3740	396	5162	6821	3600	5669	4873	61141
1988	36755	317	4615	441	6303	8118	4250	6681	5691	73171
1989	42572	421	4857	466	8231	9052	4732	8032	7469	85832
1990	50470	449	5956	523	8943	10507	5724	9269	7861	99702
1991	55368	575	7894	815	11078	12902	6560	10944	9991	116127
1992	65156	795	12822	1241	14769	16563	8558	13241	11788	144933
1993	70090	921	14618	1525	17318	19260	10819	15684	15115	165350
1994	80589	990	17861	2163	19621	22497	12625	18122	17128	191596
1995	85569	1117	19555	2862	23093	24326	13995	20533	18924	209974
1996	96896	1342	22466	3598	26093	28317	15898	23521	21257	239388
1997	108785	1495	24816	4457	29263	30551	19315	27157	23731	269570
1998	112495	1553	26987	4383	30483	33687	22598	29778	27834	289798
1999	132373	1685	30337	4632	33262	39313	24631	33203	30582	330018
2000	145131	1815	33550	5942	37382	42895	29336	36919	33810	366251
2001	155624.5	1817	38409	7749.6	25585.4	78387.4	31424.6	46722.4	39734.5	425454.4
2002	166090.2	2148.9	37736	9137.9	28837.6	71921	34959.2	48727.3	44493.8	444051.9
2003	172802.6	2310.4	38825.6	11446.7	30955.4	76234.7	39361.9	51112.4	50496.3	473546
2004	186124.9	2506.6	41673.3	11974.4	33254.3	88161.1	46283	53718.8	54296.9	517993.3
2005	199368.1	2748.2	44884.7	12781.6	36644.2	88733.2	51336.4	66584	63498.2	566578.6
2006	211704.5	3133.6	47840.3	13171.9	40952	99612.5	61249.5	82021	70645	630330.3
2007	226823	3417	52172	14841	45099	102691.1	69554.8	99258	83508	697363.9
2008	247191	4375	57185	15219	54134	116808.4	76818.3	107174.1	100537	779441.8
2009	309553	5084	65447	14629	63741	138064	92618	120725	129031	938892
2010	395755	5926	70924	15244	77289	178414	95304	139830	139884	1118570
2011	478149	6956	80531	24001	89356	200363	105834	156347	156603	1298140
2012	516951	8166	90794	17488	98539	222153	123990	185336	182715	1446132

Note

X1= Agriculture Fisheries and Forestry
X2= Mining and Quarrying
X3= Manufacturing
X4= Electricity Gas and Water
X5= Construction
X6= Trade Restaurant and Hotel
X7= Transport Commu. and Storage
X8= Finance and Real Estate
X9= Community and Social Services

Appendix 3.2 GDP deflators

Year	X1	X2	X3	X4	X5	X6	X7	X8	X9	GDPfc
1971	0.0875	0.0784	0.0821	0.0397	0.0826	0.0797	0.0847	0.0783	0.0948	0.0843
1972	0.1022	0.0853	0.0893	0.0432	0.0898	0.0867	0.0922	0.0852	0.1032	0.0962
1973	0.0954	0.0885	0.0926	0.0447	0.0932	0.0899	0.0956	0.0883	0.107	0.0929
1974	0.1215	0.0959	0.1004	0.0485	0.101	0.0975	0.1036	0.0957	0.1159	0.1123
1975	0.1407	0.1141	0.1194	0.0577	0.1201	0.116	0.1233	0.1139	0.1379	0.1311
1976	0.1392	0.1022	0.107	0.0517	0.1076	0.1039	0.1105	0.102	0.1236	0.1257
1977	0.1312	0.1002	0.1049	0.0507	0.1055	0.1018	0.1082	0.1	0.1211	0.1195
1978	0.1467	0.104	0.1089	0.0526	0.1095	0.1057	0.1124	0.1038	0.1257	0.1298
1979	0.1638	0.1708	0.1787	0.0864	0.1798	0.1736	0.1845	0.1704	0.2064	0.1699
1980	0.174	0.1244	0.1302	0.0629	0.131	0.1265	0.1344	0.1242	0.1504	0.1542
1981	0.1809	0.1404	0.1469	0.071	0.1478	0.1427	0.1517	0.1401	0.1697	0.1656
1982	0.1976	0.1556	0.1628	0.0787	0.1638	0.1581	0.1681	0.1553	0.188	0.1819
1983	0.2152	0.1833	0.1919	0.0927	0.193	0.1863	0.198	0.183	0.2216	0.2043
1984	0.2323	0.1916	0.2006	0.0969	0.2018	0.1948	0.207	0.1913	0.2316	0.2179
1985	0.2478	0.2282	0.2394	0.1157	0.2408	0.2325	0.247	0.2283	0.2764	0.2429
1986	0.2877	0.2523	0.2692	0.1682	0.27	0.2684	0.2712	0.2628	0.2987	0.2779
1987	0.3269	0.2844	0.3026	0.1757	0.3016	0.304	0.2993	0.2996	0.3238	0.3132
1988	0.3682	0.3141	0.3532	0.1805	0.3298	0.3454	0.3403	0.3379	0.3333	0.3501
1989	0.4018	0.3656	0.3999	0.2026	0.3792	0.3816	0.3742	0.3808	0.4016	0.3896
1990	0.4503	0.412	0.4467	0.1763	0.4206	0.433	0.4088	0.4119	0.4151	0.4313
1991	0.4836	0.4844	0.5031	0.2043	0.4822	0.477	0.4139	0.4418	0.5007	0.472
1992	0.5752	0.6196	0.6191	0.2914	0.5965	0.5783	0.4968	0.5079	0.5532	0.563
1993	0.6227	0.7024	0.6644	0.3942	0.6672	0.6319	0.5792	0.5685	0.6501	0.6219
1994	0.6653	0.712	0.7228	0.5267	0.7092	0.6805	0.6256	0.6177	0.6832	0.6679
1995	0.7088	0.7764	0.7762	0.6222	0.7934	0.6978	0.627	0.671	0.7202	0.7115
1996	0.7687	0.8255	0.8178	0.6553	0.841	0.7794	0.6754	0.7145	0.7629	0.7674
1997	0.8288	0.8612	0.8438	0.798	0.8887	0.8112	0.7616	0.7878	0.8245	0.8248
1998	0.8482	0.8834	0.8873	0.8189	0.9084	0.8482	0.8289	0.8156	0.8985	0.8573
1999	0.9717	0.9241	0.9473	0.8179	0.929	0.9515	0.8468	0.866	0.9269	0.9345
2000	1.0125	0.9519	0.9773	0.9176	0.9526	0.9725	0.9424	0.9164	0.9707	0.9775
2001	1	1	1	1	1	1	1	1	1	1
2002	1.0353	1.0871	1.0377	1.0588	1.0592	1.0461	1.0266	1.0725	0.999	1.039
2003	1.0425	1.1326	1.0672	1.1141	1.1136	1.0846	1.0987	1.1537	1.021	1.0711
2004	1.0713	1.2341	1.1214	1.1199	1.2005	1.13	1.2019	1.2105	1.0323	1.1144
2005	1.1088	1.2669	1.1769	1.1498	1.2856	1.2119	1.2526	1.3144	1.139	1.1795
2006	1.1568	1.3344	1.2299	1.1392	1.3344	1.309	1.4583	1.4455	1.2142	1.2618
2007	1.2274	2.4707	1.3079	1.1359	1.4339	1.4151	1.5774	1.567	1.3144	1.3538
2008	1.264	1.7409	1.4461	1.1526	1.6383	1.5407	1.5929	1.538	1.4848	1.4294
2009	1.5365	2.0087	1.6725	1.1474	1.9101	1.7358	1.7954	1.6991	1.7214	1.6577
2010	1.9257	2.2925	1.7603	1.1736	2.1815	2.1019	1.7123	1.9117	1.7357	1.8956
2011	2.2262	2.6378	1.9209	1.7695	2.4068	2.3152	1.8405	2.083	1.8595	2.1165
2012	2.2926	2.948	2.0899	1.1893	2.6484	2.4827	2.0391	2.394	2.0464	2.2575

Note

X1= Agriculture Fisheries and Forestry
X2= Mining and Quarrying
X3= Manufacturing
X4= Electricity Gas and Water
X5= Construction
X6= Trade Restaurant and Hotel
X7= Transport Commu. and Storage
X8= Finance and Real Estate
X9= Community and Social Services

Appendix 3.3

Estimation of per capita production function

Output may increase with the increase in labour and capital but it does not ensure the increase in per capita output. Keeping in view this very phenomenon, an aggregate per capita production function for Nepalese economy is estimated as follows.

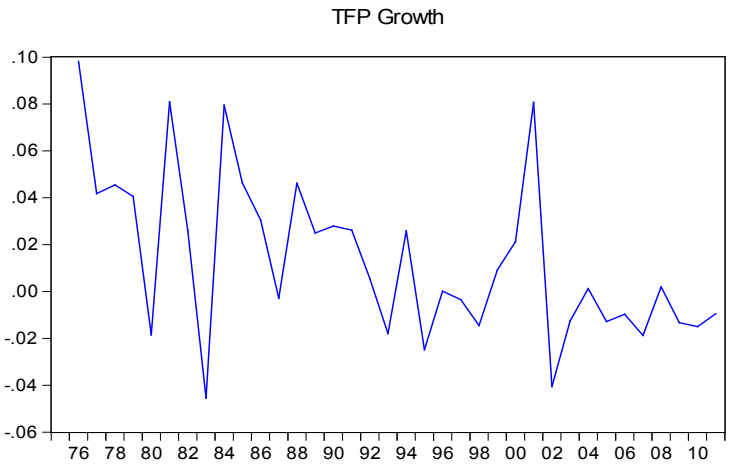
lnPCRY= -4.805 + 1.349 lnPC RK ……(3.1)
Pvalue (0.00) (0.00)
R^2=0.80 F=140.79(0.00) DW=0.08 N= 37
Note: lnPCRY=Natural log of real output per workers.
lnPRK= Natural log of real capital per workers.

In this paper workers are defines as economically active population. The DW statistics of the estimated per capita production indicates that the function is suffering from auto correlation. So, estimated coefficients of per capita capital may not be accurate. So, the following generalized first difference equation is estimated.

YSTAR= -0.180 + 1.031 KSTAR ……(3.2)
Pvalue 0.18 (0.00)
R2= 0.80, N=37, DW= 2.08, F=144.19(0.00)
Note: YSTAR= generalized difference of lnPCRY; KSTAR= generalized difference of ln PCRK.

This equation is free from auto correlation. The estimated elasticity coefficient is statistically significant at zero percent level. It means that the elasticity coefficient of original per capita production function is also 1.031. Using the elasticity coefficient (1.031) as described in methodology the growth in TFP is estimated. The nature of TFP growth is also shown in figure 3.8.

Figure 3.8: Growth in total factor productivity



Source: Author's construction based on data of economic Survey.

To examine the effect of demographic and other variables on TFP growth and hence the economic growth following equation is estimated by OLS method.

Factors affecting the TFP growth

$$TFPG_t = 0.024 + 0.023DlnTOPEN_t - 3.43DlnLEXP_t - 0.235DlnFERT_t - 0.337DlnP_{t-1}$$
Pvalue: (0.26) (0.49) (0.005) (0.68) (0.05)
$$+ 0.94\ DlnLITE_{t-1} + 0.118DlnGEPY_{t-1} + 0.104DlnRX_t + 0.014DlnGCY_{t-1} \ldots \textbf{(3.3)}$$
(0.006) (0.006) (0.00) (0.66)

R^2= 0.77, N=35, DW= 2.28, F=10.99(0.00), JB=0.44(0.80)

Note: RX= real export; TOPENt= Total trade to GDP ratio; P= General level of price;

GEPY= Govt. expenditure to GDP ratio; GCY= Govt consumption to GDP ratio; LEXPt=Life expectancy,

FERT=Total fertility rate[2], LITE= Literacy rate.

The model is examined for the violation of OLS assumption. DW statistics shows that the model is free from autocorrelation. JB statistics shows that error term is normally distributed. Thus the findings are statistically reliable.

Aggregate production function and economically active population

It is clearly seen that per capita capital does matter for economic development. But what is the role of actual level of economically active population for the growth of income and output of the economy? To answer this question following aggregate production function is estimated by OLS method.

$$lnRY = 0.8623 + 0.6583\ lnRK + 1.37lnL \ldots\ldots\ldots\ldots\ldots\ldots (3.4)$$
Pvalue (0.27) (0.00) (0.00)

R^2=0.97 F=968.21(0.00) DW=0.20 N= 37

Note: lnRY=Natural log of real output.
lnRK= Natural log of real capital.
lnL=Natural log of economically active population

The estimated equation shows the positive relationship between real stock of capital, labour force and real output. The equation is auto-correlated, so estimated elasticity coefficients may be imprecise. To correct the auto-correlation, the variables of the model are transformed in to generalized fist difference form estimating the auto correlation coefficient and re-estimated it by OLS method. The estimated equation is shown in equation 3.5.

$$YFD = -0.086 + 0.817\ KFD + 0.563\ LFD \ldots\ldots\ldots\ldots\ldots\ldots (3.5)$$
P-value (0.50) (0.00) (0.07)

R2=0.81 F=74.71(0.00) DW=2.17 N= 36

Note:YFD= Generalized first difference of natural log of real output.
KFD= Generalized first difference of Natural log of real capital.
LFD= Generalized first difference of Natural log of economically active population

The elasticity coefficients of re-estimated equation are statistically significant. The elasticity of capital is 0.817 while that of labour is 0.563. Thus economically active population is positively contributing to increase

2 Continuous data on fertility rate are lacking in CBS so it is taken from World Bank for this estimation purpose

in real output of the economy. Thus economically active population does matter to the increase in real GDP at factor cost. The contribution of capital stock to real output is higher than the contribution of labour force. Thus, higher growth rate in capital may be more preferred to achieve higher growth rate in Nepal.

Return to scale:

Above equation states that elasticity coefficient of capita (α) is equal to 0.81 and elasticity coefficient of labour (β) is equal to 0.56. Following hypothesis are set to examine the return to scale:

Null hypothesis: $\alpha+\beta=1$
Alternative hypothesis: $\alpha+\beta>1$

These hypotheses are tested using Wald statistics. The test statistics t, F, and chi-square could not reject the null hypothesis of constant return to scale. The values of test statistics are below.

Test for return to scale

Test statistics	Value	Degree of freedom	Probability
t-statistics	1.54	33	0.13
F-statistics	2.39	(1,33)	0.13
χ^2 statistics	2.39	1	0.12

Source: Author's derivation

Since constant return to scale is operating in economy, this aggregate production function reduces to per capita production function as discussed above. Further analysis will give the same result as we derived per capita production function. The benefit of estimating aggregate production is that it measures the elasticity of capital and labour explicitly.

CHAPTER 4

URBANISATION IN NEPAL: SPATIAL PATTERN, SOCIAL DEMOGRAPHY AND DEVELOPMENT

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Abstract

Nepal's urbanisation level is low and much of its urbanisation is induced. Twenty seven per cent of Nepal's population lived in 130 designated urban areas or municipalities in 2014. This chapter discusses the current level of urbanisation at the national, regional and district level using data from the population and housing census of 2011 in particular, and earlier censuses in general. Designated municipalities are referred to as urban areas and 7.2 million people live in such municipalities currently. Despite a low level of urbanisation, the annual growth rate of the urban population is 8%, about 6 times higher than the national population. This growth rate is mainly due to the additions in the number of municipalities during the intercensal periods. Regional differences are evident with the central development region and Tarai being more urbanised than mid-west and Mountain. Urban areas of 20,000 to 49,999 people dominate in number and population share. The urban population is relatively mature and literate compared to the rural population. Most of the urban areas, especially those newly declared and those in the Mountain and mid-and far-west, have a rural character in respect to physical facilities, literacy, occupational structure and educational attainment. Population size appears to be the prime criteria for designating urban areas and there is a need to come up with a more functional and economic criteria so that it also reflects urbanism, a missing dimension in urban designation in Nepal.

4.1 Introduction

This chapter discusses the current status of urbanisation and urban growth in Nepal based on the population and housing census of 2011. The main objectives of the chapter are to: i) analyse the current status of urbanisation, its growth and regional pattern, ii) examine the social demographic features of urban areas, and iii) discuss urbanisation and development status based on selective indicators such as human development indicators, poverty, availability of basic services and primacy of urban areas. Government designated municipalities are referred to as urban areas in practice and Nepal largely practices a population size criteria to declare an area as municipality. This chapter shows that despite significant improvements in the level of urbanisation over the last decade, Nepal still trails behind all SAARC countries except Afghanistan. Urban areas lack urban facilities and this is more pronounced

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in the case of newly designated municipalities and those in the mountains. Regional inequalities persist and a tendency of population concentration towards a few urban areas continues. With respect to social demography, urban areas are reasonably healthy but poverty prevails and a larger proportion of households in the majority of municipalities, especially in smaller ones, lack coverage of basic service provisions.

4.1.1 Concepts and definitions

It is important to define three interrelated concepts namely urban, urbanisation and urbanism. The term urban relates to towns and cities and is defined as places that exceed the threshold of population size and/or density frequently used by the government and its authorised body that carries out censuses of the population (The Dictionary of Human Geography, 2003:p.870). Population is spatially categorised into two categories, rural and urban. This categorisation is normally based on pattern of residence and characteristics associated with the residential pattern. In most cases, countries adapt various demographic, spatial and economic criteria to define urban areas. The areas that meet or exceed these criteria are defined as urban areas and the rest of the inhabited area is rural. These two spatial categories appear quite distinct in everyday life and in conversation and use but these terms are not as distinct as they appear on the surface when analysed in detail. There is no definite line of demarcation between rural and urban landscape and whatever demarcations there are, are all for convenience or for administrative purposes.

At least three sets of criteria are used to define a place as urban worldwide. These include i) population size, ii) space and iii) social and economic structure plus functional characteristics. Carter (2010) gives a few examples of criteria used in various countries. A minimum population size is almost a universally accepted criterion for defining urban but the size varies by countries. For example, Norway and Iceland use a population size of 200 or more while Canada uses 1,000 or more and France, Argentina, Ethiopia, and Israel use 2,000 or more inhabitants as a minimum. Similarly, India and Botswana use 5,000 inhabitants, whereas Japan uses as high as 50,000 inhabitants to be considered as urban. More importantly, Peru uses the concept of dwellings rather than population per se; Egypt considers its governorates and district capitals as urban. In addition to the minimum population size, hierarchies of urban areas are also recognised. In Czechoslovakia, three hierarchies such as large towns, small towns and agglomerated settlements are defined based on distinct population sizes.

The space criterion is also adapted in combination with a minimum population size by many countries. The space criterion includes two indicators, namely a minimum population density and contiguity for incorporation or for exclusion of sub-urban areas. For example, India uses a density criterion of no less than 390 persons per square kilo metre to be designated as an urban area. Likewise, France uses a contiguity criterion with no more than 200 metres between houses. Furthermore, in Japan there should be 60% or more houses in a built-up area to be considered as urban. In Arica, a town is a term normally used only for European settlements. Australia uses the concept of population cluster indirectly relating to space criterion together with 1,000 or more inhabitants.

The social and economic structure and functional characteristics are generally used in association with population size and/or space criterion. Sometimes, settlements are designated as urban by virtue of

the administrative status of the area such as headquarters, municipalities, centres or towns. Economic indicators such as the percentage engaged in non-agriculture activities either with respect to the economically active male population or the population in general or the total-households are used by many countries. India uses 75% or more of its economically active male population engaged in non-agriculture activities as one of the criterion, whereas in Israel an urban place must have more than one-third of its households engaged in non-agriculture activities. Similarly an urban place must have 60% or more of the population engaged in manufacturing, trade or other urban businesses in Japan. In Czechoslovakia a small town should not have more than 15% of its population active in agriculture. Households' access to minimum infrastructure facilities and social provisions is a must to be considered as urban but specific brackets are implicit in the case of many countries.

While urban ordinarily refers to a spatial entity, the concept of urbanisation can be referred to as a process of becoming urban or a process by which villages turn into towns and towns develop into cities. As a demographic process, the end of the sequence is almost a totally urbanised society where a great majority of a country's population is living in a few large cities. In other words, urbanisation refers to changes in the proportion of the population of a country living in defined urban areas (Palen, 1992). Normally urbanisation involves three important factors, behaviour, structure and demography. Behaviour is reflected as a change in fashion, manner of interpersonal dealings and the behavioural pattern over time. The structure refers to the evolution of a particular type of economic structure usually non-agricultural. Demography reflects the concentration of the population in a few localities or areas.

Associated with urbanisation is the term urbanism, which refers to the way in which urban people appear different than rural people. In vernacular Nepali, urban translates as *shahar* and urban people as *shahariya*. On the other hand, rural translates as *gaun* and rural people as *gaunle*. In addition, in Nepali another term *kanthe* is also used to refer to people in-between i.e., between urban and rural. More generally, people living close to or encircling urban areas are referred to as *kanthe*. However, for unknown reasons, these two terms namely *kanth* and *kanthe* are commonly used in a more derogatory than respected identity. *Kanth* may loosely be translated as peri-urban in native English and *kanthe* as peri-urbanites. However, these terms are arguable and need more detailed investigation, which is beyond the scope of this chapter. The intention here is to only recognise these Nepalese terms and concepts that have often been overlooked in earlier studies of urbanisation in Nepal.

In laymen's terms in Nepal, rural equates with simplicity and urban with complexity. Likewise, rural directly or indirectly indicates agrarian, subsistence nature and a traditional way of life, whereas urban indicates the opposite i.e., non-agricultural, commercial and so called modern way of life. In a more derogatory sense, often rurality is perceived, especially by urbanites, as "uncivilised" and urbanism as "more civilised." Therefore urbanism is related to these complexities and ruralism to these simplicities. In the context of Nepal it is yet to be analysed whether urban areas reflect urbanism or ruralism. This is an important area to be explored especially in the context of the existing practice of the government to declare municipalities without considering the economic structure, functional bases and contiguity of settlements[1].

1 This important issue is beyond the scope of this chapter for technical and practical reasons of time and data (weight age) inconsistencies.

4.1.2 Urban concept as adopted in Nepal

Nepal largely practices the population size criteria to declare urban areas. From 1961 to 1990 the Nepali term nagar panchayat was used to denote urban areas (municipalities), while after 1990 the term nagar panchayat has been replaced by the term nagarpalika. Over the years, there have been attempts to define urban areas using urban facilities, stature as a municipality and annual revenue to further categorise the hierarchy of municipalities (for details see, Bastola 1995, Sharma 2003, Subedi 2010). A regional dimension with respect to population size is adapted to designate urban areas2. In Hill (including Mountain) the minimum population size of 10,000 is set, which means to be designated as a municipality a particular area has to have more than 10,000 populations. Correspondingly, in the Tarai, the figure is set as more than 20,000. The latest legal instruments i.e., the Municipality Act 1992 and the Local Self-governance Act 1999 recognise further subdivisions in existing municipalities. As a result, three categories of municipalities are recognised namely mahanagarpalika (metropolitan), upa-mahanagarpalika (sub-metropolitan and nagarpalika (municipality) on the basis of population size, annual revenue and level of infrastructure facilities available in the municipalities. In addition, a regional dimension is also acknowledged with respect to population size when granting municipal status to a settlement. In addition to the minimum population size outlined above, the annual revenue of NRs.500,000 or more in the Hill and NRs 5 million or more in the Tarai is a minimum requirement for a municipality. Likewise, minimum urban facilities such as electricity, road, drinking water, communication and other similar facilities are also considered as the rudiments of a municipality, irrespective of region.

Of the three categories of municipalities, those fulfilling the minimum of the above mentioned population size, revenue and basic facilities apply to being a municipality in general. For the next higher order municipality there are further qualifications on the existing criteria. To qualify as upa-mahanagarpalika (sub-metropolitan), the population has to be more than 100,000, with an annual revenue of at least NRs.100 million and an infrastructure for national and international sports events, city halls, etc. Similarly, to be classified as a mahanagarpalika (the metropolitan), the population within the municipal boundary has to be more than 300,000, the annual revenue at least NRs. 400 million and there have to be infrastructure facilities for international sports events, universities, specialised services etc. Taking into consideration these criteria, by 2001 there was only one metropolitan i.e., Kathmandu and four sub-metropolitans, Biratnagar, Lalitpur, Pokhara and Birgunj. This is still the same in the 2011 census although their relative status in terms of population size has changed.

4.1.3 Data limitations

As a government agency the Central Bureau of Statistics (CBS) is mandated to carry out decennial censuses and it has been conducting population censuses since its establishment. During the administration of the Population and Housing Census 2011, there were only 58 municipalities. The Bureau used Form I for total enumeration and Form II was administered on a sample basis to every eighth household. When the results were published, weight age was applied to the data obtained from Form II to make the data compatible with those from Form I. As per CBS sources (see elsewhere in this monograph) the weight age for urban and rural areas were different. After the results of the 2011 census were formally published by the Central Bureau of Statistics, the government of Nepal, on

2 The terms ‘urban areas’ and ‘municipalities’ are used interchangeably throughout this document.

May 8, 2014, declared an additional 72 municipalities incorporating more than 283 existing VDCs. In addition it also annexed a few VDCs in the existing municipalities (see Table 3, 4 and 6 below). As a result, the total number of municipalities (urban areas) is now 130. It is also clear that many VDCs who have the potential to be municipalities were not declared as such, since the Committee formed to designate additional municipalities could not conclude whether to declare these VDCs as municipalities or not (personal communication with Committee members, 2014). Notable are many VDCs in the Kathmandu valley (including Jorpati which has a higher growth rate than existing municipalities of the Kathmandu valley) that meet all the requirements but still remain VDCs. The declaration was made in haste, alongside the declaration the government formed another Committee to recommend additional municipalities and resolve pending issues. For this chapter, this untimely declaration of 130 (more municipalities are likely to be declared in the near future) has resulted in important implications on data limitation. For reasons of different weight age for urban and rural areas, data available from Form II could not be made available for this chapter. Therefore, in the following analysis some inconsistencies are evident. Most sections use information on the 130 municipalities but in a few cases information on only 58 municipalities is used. (A note has been provided in such cases). Furthermore meaningful analysis could not undertaken due to this.

4.2 Urbanisation and urban areas in general

4.2.1 Urban situation at a glance

Information on urban population in Nepal dates back to the 1952/54 census. Despite the use of the term shahar in earlier reports of the population count, no formal definitions were provided in the census except the mention of prominent settlements. The census of 2011 specified ten prominent settlements with more than 5,000 inhabitants. In subsequent years urban areas were defined by various acts promulgated for the politico-administrative division of the country. The number of urban areas or municipalities as of October 2014 is 130. However, as noted above during the administration of the Population and Housing Census of 2011, there were only 58 municipalities in the country. In 1961 there were 16 nagar panchayats (municipalities), the number increased to 23 in 1981. Between the 1981 and 1991 censuses, 10 more municipalities were added making the number 33. By the 2001 census it had reached 58. By 2014, there are 130 municipalities and more than 60 are in the pipeline[3] (personal communication with officials in the Ministry of Federal Affairs and Local Development, 2014).

Table 4.1 gives summary information on the existing urban situation in Nepal in 2014. With a total of 130 municipalities, approximately 7.2 million people live in officially designated municipalities i.e., urban areas. This is 27.2% of the country's total population of 26,494,504 as recorded in the 2011 census. The average household size in urban areas is 4.4 persons against the national average of 4.9 persons. Females outnumber males in urban areas. This is similar to the national average but the female-male numerical gap is closer in urban areas than in the country as a whole. The sex ratio (measured as the number of males per 100 females) is 96.3 in urban area whereas the national average is 94.2. This suggests that there are more males than females in urban areas compared with the national average.

3 Informally, the ministry people also noted that the government was also discussing the possibility of declaring all remaining VDCs of Kathmandu valley as municipalities by reorganising or regrouping them. They were waiting for the recommendations of the committee formed on May 2014.

Table 4.1: Urban situation at a Glance 2014

SN	Description	Facts
1.	Total municipalities	130
2	Total urban households	1,642,197
3.	Urban population	7,199,514
4.	Percentage urban	27.2%
5.	Household size	4.38
6	Male	3,532,434 (49.1%)
7.	Female	3,667,080 (50.9%)
8.	Sex ratio	96.3
9.	Population of largest municipality (Kathmandu)	975,453

Source: Based on Population and Housing Census, 2011.

By all international standards and by any criteria, Nepal's level of urbanisation is low. According to the State of World Population 2011, more than 50% of people live in urban areas in the world. In less developed countries it is 45% urban, and even the average level of urbanisation in least developed countries is 29%. Nepal is the least urbanised country with respect to its neighbouring countries as well. In 2011, India's level of urbanisation was 30%, Bhutan's 35% and Bangladesh's 29%. Afghanistan, with an urbanisation level of 23% is the only SAARC country that has a lower urbanisation level than Nepal. Likewise in China, 47% of its people live in urban areas and in Pakistan the corresponding proportion is 36% (see UNFPA 2011). Nepal's recent decision to declare 72 new municipalities, adding 10% to the urban population, indicates the nation's intention to make its urbanisation level largely on a par with other South Asian countries. This is also one more step to achieving the government's ambition to upgrade the nation's status from a least developed country to a developing one by 2022.

4.2.2 Urban areas in 2011

Of the 75 districts in the country, 62 districts have one or more municipalities. Thirteen districts do not have any municipalities at all to date. Most the districts without a municipality are from the Mountain region. Of the total 16 mountain districts, only seven districts have urban areas. Sankhuwasabha, an exception, has two municipalities; otherwise all mountain districts have only one urban area. In the case of Hill, 35 out of 39 districts have one or more municipalities and four do not have any. Districts without municipalities in the hill include, Rolpa, Rukum, Jajarkot, and Ramechhap[4]. The first three are located in the Mid-western development region.

An analysis of the occasions where municipal areas have been declared suggests that the declarations have been made at random. The declarations do not necessarily follow any systematic evolutionary pattern of population growth of an area or development infrastructure facilities there. To date in the history of seven decades since 1950, the existing 130 municipalities have been declared on 14 occasions. The first declaration was in 1953 when six prominent localities including Kathmandu, Biratnagar, Lalitpur, Bhaktapur, Birgunj and Bhadrapur, were declared as urban areas. Table 4.2 presents a summary of the years when the 130 municipalities were declared, by development region.

4 Manthali, the district headquarters of Ramechhap was supposed to be declared as municipality earlier but because of the debate over the areas to be incorporated within the municipality and its name, it was not proposed by the Committee that recommended 72 municipalities (personal communication with the Committee member).

The largest number of municipalities was declared in 2014 and 1997. It is interesting to note that on most occasions, the same government that conducts the decennial censuses and uses its results for planning and development of the country has almost, as a rule, declared municipalities soon after the census operations are over and not before its operation. It is not known whether it is intentional or accidental but it shows an insensitivity on the part of national government and a poor coordination between agencies that are responsible to declare/define urban areas and agencies that are responsible to carry-out census operations.

Table 4.2: Number of urban areas by gazetted year and by development region

Gazetted year	Development Regions					Total
	Eastern	Central	Western	Mid-western	Far-western	
1953	2	4	-	-	-	6
1957	-	-	1	-	-	1
1959	1	-	1	-	-	2
1962	2	1	1	1	-	5
1967	-	-	1	-	-	1
1969	-	1	-	-	-	1
1976	1	-	-	1	1	3
1977	-	-	-	-	1	1
1978	1	1	-	1	-	3
1982	1	3	1	-	1	6
1986	1	3	-	-	-	4
1992	-	1	1	1	-	3
1997	5	6	6	2	3	22
2014	23	15	20	6	8	72

Note: The dates are based on CBS 1995, 2003 and Ministry of Federal Affairs and Local Development, 2014.

As population distribution is uneven by ecological and development regions, so is the number of urban areas and the years they were declared as urban areas. In 2001, 29 out of 58 municipalities were located in the Tarai region. The Hill region had 27 and Mountain region had only 2 municipalities. By 2014, the distribution is more skewed towards Tarai than before. Of the 130 municipalities, 70 are located in Tarai, eight in Mountain and the remainder in Hill. The average population size of the municipalities is 55,381. The newly added municipalities have much lower average population sizes than the earlier ones. For example, the average population of 58 municipalities is 75,967, while the newly added ones have an average population of 38,798 only. This means the average population of new municipalities is about half that of earlier ones. The overall sex ratio of newly added municipalities is much lower than the older ones. While the newly added ones have an average sex ratio of 89.9 the corresponding figure for older ones is 100.6. The average household size in the newly added municipalities is much higher (4.7 persons) and fairly close to the national average, while in the older ones it is much lower at 4.2 persons. Demographically, all these factors indicate that the added municipalities are much more rural in character.

Table 4.3 presents the list of municipalities, their gazette year, the population of each of the municipalities and their sex ratio for the eastern development region. Of all the municipalities in the region, Biratnagar and Bhadrapur are the oldest ones. Rajbiraj comes next and all three are in the Tarai region[5]. In the Hill, Ilam is the oldest municipality and it was gazetted in 1962 together with Dharan (Tarai). The majority of municipalities in Table 3 were gazetted in 2014. The population sizes of municipalities range from 201,125 (Biratnagar) to as small as 16,102 (Bhojpur). All three municipalities in the eastern mountain have population sizes larger than many Hill municipalities. As a general rule municipalities located in the Tarai have larger population sizes than those located in Hill and Mountain.

Table 4.3: Eastern Development Region: municipalities, gazetted year, population and sex ratio by districts, 2011

District	Name of the Municipality	Gazetted year *	Population	Sex ratio
Mountain				
1. Taplejung	1.Taplejung	2014 (2071)	19,085	90.1
2.Sankhuwasabha	2.Khandbari	1997 (2053)	26,301	90.3
	3. Chainpur	2014 (2071)	24,735	86.8
Hills				
3.Panchthar	4. Phidim	2014 (2071)	24,768	90.5
4. Ilam	5. Ilam	1962 (2019)	18,633	92.4
	6. Suryodaya	2014 (2071)	27,040	96.7
5. Bhojpur	7. Bhojpur	2014 (2071)	16,102	87.7
6. Terhathum	8. Myanglung	2014 (2071)	19,659	86.3
7. Dhankuta	9. Dhankuta	1978 (2035)	26,440	88.0
6. Khotang	10. Diktel	2014 (2071)	17,793	89.7
7. Okhaldhunga	11. Siddhicharan	2014 (2071)	16,696	83.5
8. Udayapur	12. Triyuga	1997 (2053)	70,000	88.7
	13. Beltar-Basaha	2014 (2071)	23,918	81.9
	14. Katari	2014 (2071)	28,123	89.0
Tarai				
9. Jhapa	15. Bhadrapur	1953 (2009)	18,164	95.6
	16. Damak	1982 (2039)	75,102	89.3
	17. Mechinagar	1997 (2053)	57,545	92.1
	18. Birtamod	2014 (2071)	60,174	95.5
	19. Shani-Arjun	2014 (2071)	45,174	90.1
	20 Kankai	2014 (2071)	40,141	85.8
10. Morang	21.Biratnagar (SM)	1953 (2009)	201,125	102.8
	22. Urlabari	2014 (2071)	35,166	86.3

(Table continues...)

5 The term “region” has been used to denote ecological as well as development regions. Mountain, Hill and Tarai are ecological regions and Eastern, Central, Western, Mid-western and Far-western are development regions. There is also a practice of referring to ecological zones rather than ecological regions. However, throughout this paper for convenience, the term region is used in both cases.

(Annex 4.3 continued...)

District	Name of the Municipality	Gazetted year *	Population	Sex ratio
	23. Belbari	2014 (2071)	31,647	85.2
	24. Pathari-Shanishchare	2014 (2071)	49,808	82.7
	25. Sundar-Dulari	2014 (2071)	32,795	88.6
	26. Koshi-Haraicha	2014 (2071)	47,723	87.6
	27. Rangeli	2014 (2071)	28,516	97.2
11. Sunsari	28. Dharan**	1962 (2019)	133,082	88.5
	29. Inaruwa	1986 (2043)	28,454	99.3
	30 Itahari	1997 (2053)	74,501	90.7
	31. Dhuhabi-Bhaluwa	2014 (2071)	25,545	100.4
12. Saptari	32. Rajbiraj	1959 (2016)	37,738	109.0
	33. Shambhunath	2014 (2071)	30,207	90.3
	34. Kanchanrup	2014 (2071)	48,691	94.4
14. Siraha	35. Lahan	1976 (2032)	33,653	105.6
	36. Siraha	1997 (2053)	28,442	94.8
	37. Mirchaiya	2014 (2071)	45,716	97.0

Note: * Gazetted year for municipalities declared prior to 2001 is taken from Sharma 2003.
** The government of Nepal decided to annex Panchkanya in the existing Dharan municipality on May 8, 2 014.
SM is an abbreviation for sub-metropolitan.

Source: Based on data obtained from CBS, 2014.

The average sex ratio in the municipalities of eastern region ranges from as high as 109 in Rajbiraj to as low as 81.9 in Beltar-Basaha (Udayapur). Pathari-Sanischare (82.7), Siddhicharan (83.5), Beltari (85.2) and Kankai (85.8) are other municipalities with low sex ratios. On the contrary, apart from Rajbiraj, municipalities with high sex ratios are Lahan (105.6), Biratnagar (102.8) and Dhuhabi-Bhaluwa (100.4). Of the total 37 municipalities only four municipalities have sex ratios higher than 100. None of the municipalities in Hill and Mountain have sex ratios higher than 97. The sex ratio in most of Hill and Mountain municipalities is in the 80's. The lower sex ratio in 33 municipalities in the eastern region is largely a reflection of external migration of males from these areas. Relatively higher sex ratios in the Tarai municipalities are likely to be a reflection of lower external migration from these areas compared with Hill and Mountain regions respectively.

Table 4.4 presents the list of municipalities, their gazette year, population of each of the municipalities and their sex ratio for the central development region. Kathmandu, the capital city is the oldest municipality gazetted in 1953. Three other municipalities namely Lalitpur, Bhaktapur and Birgunj were gazetted in the same year. Fifteen out of 35 municipalities are latest additions. Among the newly added municipalities, eleven are in the Tarai while only four are in Hill and Mountain. Chautara is the latest addition in central mountain. Of all the development regions, inequality in population sizes of municipalities is largest in the central region. Kathmandu has nearly one million people while Dhulikhel, gazetted as early as 1986, has only 14,283 people. The population of the largest municipality in this region is 68.3 times higher than the population of the smallest one. Dhulikhel, Chautara, Thaha, Bidur and Panauti are the smallest municipalities and Kathmandu, Lalitpur, Bharatpur, Birgunj and Hetauda are the largest municipalities, all with populations over 100,000. The population of the first ranked municipality i.e., metropolitan, has a population 4.4 times higher than the second ranking municipality Lalitpur (sub-metropolitan) in this region.

Table 4.4: Central development region: urban areas, gazetted year, population and sex ratio by districts, 2011

District	Name of Municipality	Gazetted year*	Population	Sex ratio
Mountain				
1. Dolakha	1. Bhimeshwor	1997 (2053)	22,537	87.1
2. Sindhupalchok	2. Chautara	2014 (2071)	15,606	88.2
Hill				
3. Sindhuli	3. Kamalamai	1997 (2053)	39,413	91.1
4. Kavrepalanchok	4. Banepa	1982 (2039)	24,764	99.1
	5. Dhulikhel	1986 (2043)	14,283	99.5
	6. Panauti	1997 (2053)	27,358	91.8
	7. Panchkhal	2014 (2071	33,847	90.6
5. Bhaktapur	8. Bhaktapur	1953 (2009)	81,748	101.0
	9. Madhyapur Thimi	1997 (2053)	83,036	106.0
6. Lalitpur	10. Lalitpur (SM)	1953 (2009)	220,802	106.3
7. Kathmandu	11. Kathmandu (M)	1953 (2009)	975,453	110.4
	12. Kirtipur	1997 (2053)	65,602	125.2
8. Nuwakot	13. Bidur	1986 (2043)	26,750	90.6
9. Dhading	14. Nilkantha	2014 (2071)	39,578	84.4
10.Makwanpur	15. Hetauda**	1969 (2026)	135,745	96.3
	16. Thaha	2014 (2071)	21,717	90.5
Tarai				
11. Dhanusha	17. Janakpur	1962 (2019)	97,776	112.8
	18. Dhanushadham	2014 (2071)	45,008	94.1
	19. Chhireshwornath	2014 (2071)	43,745	104.9
12. Mahottari	20.Jaleshwor	1982 (2039)	23,533	98.8
	21. Gaushala	2014 (2071)	32,111	101.9
13.Sarlahi	22. Malangawa	1986 (2043)	25,102	106.7
	23. Harion	2014 (2071)	42,783	94.8
	24. Lalbandi	2014 (2071)	30,785	92.4
	25. Ishworpur	2014 (2071)	40,511	95.7
14. Rautahat	26. Gaur	1992 (2048)	34,937	109.9
	27. Chandrapur	2014 (2071)	72,059	99.1
15. Bara	28. Kalaiya	1982 (2039)	42,826	109.5
	29. Gadhimai	2014 (2071)	83,367	100.5
	30. Nijgadh	2014 (2071)	35,335	93.0
16. Parsa	31. Birgunj (SM)	1953 (2009)	135,904	114.6
17. Chitwan	32. Bharatpur	1978 (2035)	143,836	98.0
	33. Ratnanagar	1997 (2053)	46,367	91.6
	34. Khairahani	2014 (2071)	46,398	87.6
	35. Chitraban	2014 (2071)	26,579	82.5

Note: * Gazetted year for municipalities declared prior to 2001 is taken from Sharma 2003.
** The government of Nepal decided to annex four VDCs namely Padampokhari, Churiyamai, Hatiya and Harnamadi *in the existing Hetauda municipality on May 8, 2014.*
Source: Source: Based on data obtained from CBS, 2014.

The average sex ratio in the municipalities in the central region ranges from a maximum of 125.2 in Kirtipur to a minimum of 82.5 in Chitraban (Chitwan). Birgunj (114.6), Janakpur (112.8), Kathmandu (1110.4), Gaur (109.9), Kalaiya (109.5) are other municipalities with a high sex ratio. All municipalities in the Kathmandu valley and the majority of municipalities in the Tarai in this region have high sex ratios and therefore have a numerical dominance of males over females. It is likely that this high sex ratio is explained by the high rate of internal rural to urban migration in these urban areas. This region is probably notable for the reason that more than 37% of municipalities have sex ratios over 100.

Table 4.5 presents the list of urban areas and their associated features for western development region. Tansen is the oldest municipality in the region, gazetted in 1957. Butwal, Pokhara and Siddharthanagar were gazetted in 1959, 1962 and 1967 respectively. Until 1981 there were only four municipalities. Kapilvastu was added in 1982 and Byas in 1992. Twenty out of 32 are newly added municipalities. In 2014, Pokhara was the largest municipality (sub-metropolitan) and its population is 20 times higher than Chapakot (12,742), the smallest in the region. Chapakot and Bandipur are the only two municipalities with a population less than 20,000. Pokhara, Butwal, Tilottama, Siddharthanagar and Lumbini Sanakritic are the five largest municipalities in the region. All of them have a population of more than 60,000.

Table 4.5: Western development region: urban areas, gazetted year, population and sex ratio by districts, 2011

District	Name of Municipality	Date gazetted	Population	Sex ratio
Hill				
1.Gorkha	1. Gorkha (Prithvi N)	1997 (2053)	32,473	82.8
2. Lamjung	2. Besishahar	2014 (2071)	26,640	81.0
3. Tanahu	3. Byas Municipality	1992 (2048)	42,899	82.4
	4. Shukla Gandaki	2014 (2071)	38,307	79.0
	5. Bandipur	2014 (2071)	15,591	82.9
4. Kaski	6. Pokhara (SM)	1962 (2019)	255,465	97.7
	7. Lekhnath	1997 (2053)	58,816	84.1
5. Syangja	8. Putalibazar	1997 (2053)	30,704	79.0
	9. Waling	1997 (2053)	24,006	81.9
	10. Chapakot	2014 (2071)	12,742	73.5
6. Myagdi	11. Beni Municipality	2014 (2071)	28,511	82.5
7. Baglung	12. Baglung	1997 (2053)	29,360	85.8
8. Parbat	13. Kushma	2014 (2071)	32,419	83.4
9. Gulmi	14. Resunga	2014 (2071)	28,736	80.5
10. Palpa	15. Tansen	1957 (2014)	29,095	89.5
	16. Rampur	2014 (2071)	35,396	77.4
11. Arghakhanchi	17. Shandhikharka	2014 (2071)	40,422	80.2

(Table continues...)

(Annex 4.5 continued...)

District	Name of Municipality	Date gazetted	Population	Sex ratio
Tarai				
12. Nawalparasi	18. Ramgram	1997 (2053)	25,990	97.1
	19. Sunawal	2014 (2071)	39,843	85.2
	20. Gaidakot	2014 (2071)	55,205	92.7
	21. Kawasoti	2014 (2071)	56,788	85.0
	22. Devchuli	2014 (2071)	31,484	85.3
	23. Bardaghat	2014 (2071)	34,417	84.1
13. Rupandehi	24. Butwal	1959 (2016)	118,462	98.6
	25. Siddharthanagar	1967 (2024)	63,483	99.6
	26. Sainamaina	2014 (2071)	45,178	84.5
	27. Lumbini Sanskritik	2014 (2071)	61,157	98.6
	28. Devdaha	2014 (2071)	42,953	84.6
	29. Tilottama	2014 (2071)	93,183	88.5
14. Kapilvastu	30. Kapilvastu	1982 (2039)	30,428	99.9
	31. Krishna Nagar	2014 (2071)	20,395	109.4
	32. Shivaraj	2014 (2071)	49,988	99.6

Note: None of the mountain districts of western development region has a municipality.
SM is an abbreviation for sub-metropolitan.
Source: Based on data obtained from CBS, 2003, 2014.

The average sex ratio in the municipalities in western region ranges from a maximum of 109.4 in Krishnanagar to a minimum of 73.5 in Chapakot (Syangja). This is probably the lowest sex ratio of all 130 municipalities in the country. This lowest sex ratio is primarily attributed to a high level of external migration. Syangja is among the districts that records the largest proportion of external migrants. With the exception of Krishnanagar, the rest of the municipalities have a sex ratio lower than 100. Among municipalities with a very low sex ratio are Rampur, Putalibazar, Sukla Gandaki, Sandhikharka, and Resunga. The low sex ratios are obviously the reflection of male selective labour migration from these areas. This region is notable for the reason that, except in one, all municipalities in the Tarai also have sex ratios lower than 100.

Table 4.6 presents the list of urban areas and their associated features for mid-western development region. Nepalgunj is the oldest municipality in the region, gazetted in 1962. Birendranagar, Ghorahi and Tulsipur were gazetted in 1976, 1978 and 1992 respectively. Until 1981 there were only three municipalities. Gulariya and Narayan were added in 1997. Six out of 12 municipalities' were added in 2014. Birendranagar is the largest municipality with 85,138 people. This is 4.5 times higher than Chandannath (19,047), the smallest and the only municipality in Mid-western Mountain. Nepalgunj is the second largest municipality. With the exception of Chandannath and Narayan, the rest of the municipalities have a population size of more than 30,000 people. Similar to eastern and western development regions, the municipalities of Tarai in this region have a larger population size that those located in Hill and Mountain.

Table 4.6: Mid-western development region: urban areas, gazetted year, population and sex ratio by districts, 2011

District	Name of Municipality	Date gazetted	Population	Sex ratio
Mountain				
1. Jumla	1. Chandan Nath	2014 (2071)	19,047	96.8
Hill				
2. Pyuthan	2. Pyuthan	2014 (2071)	38,536	77.3
3. Salyan	3. Sharada	2014 (2071)	33,730	86.7
4. Dailekh	4. Narayan	1997 (2053)	21,110	87.7
	5. Dullu	2014 (2071)	30,457	94.8
5. Surkhet	6. Birendranagar*	1976 (2033)	85,138	94.5
Tarai				
6. Dang	7. Ghorahi	1978 (2035)	62,928	91.7
	8. Tulsipur	1992 (2048)	51,537	92.0
7. Banke	9. Nepalgunj	1962 (2019)	72,503	105.4
	10. Kohalpur	2014 (2071)	62,177	92.8
8. Bardiya	11. Gulariya	1997 (2053)	55,747	100.7
	12. Rajapur	2014 (2071)	52,438	94.2

Note: * The government of Nepal decided to annex two VDCs namely Latikoili and Uttar Ganga in the existing Birendranagar municipality on May 8, 2014.

Source: CBS 2003, 2014.

The average sex ratio in the municipalities in mid-western region ranges from a maximum of 105.4 in Nepalgunj to a minimum of 77.3 in Pyuthan. Of the 12 municipalities there are only two that have a sex ratio of more than 100. Municipalities with a very low sex ratio include Sharada and Narayan. Sex ratios over 100 in Nepalgunj and Gulariya are likely to be because of their statue as district headquarters attracting internal migrants.

Table 4.7 presents the list of urban areas and their associated features for far-western development region. Dhangadhi is the oldest municipality in the region, gazetted in 1976. Mahendranagar (Bhimdutta) was gazetted in the following year and Dipayal-Silgadhi was gazetted in 1982. Until 1991 there were only three municipalities in the region. In 1997 Tikapur, Amargadhi and Dasharathchand were added. Of the 14 municipalities eight were added in 2014. Bhimdutta is the largest municipality and its population is more than six-times greater than Dasharathchand, the smallest in the region. Two municipalities, Bhimdutta and Dhangadhi, have a population of more than 100,000. There are two municipalities in the far-western mountain and both of them have population sizes of over 20,000.

Table 4.7: Far-western region: urban areas, gazetted year, population and sex ratio by districts, 2011

District	Name of Municipality	Date gazetted	Population	Sex ratio
Mountain				
1. Bajhang	1. Jayaprithvi	2014 (2071)	20,280	92.4
2. Darchula	2. Api	2014 (2071)	20,797	93.0
Hill				
3. Achham	3. Mangalsen	2014 (2071)	23,150	85.4
	4. Sanfebagar	2014 (2071)	18,239	83.3
4. Doti	5. Dipayal Silgadhi	1982 (2038)	23,416	85.2
5. Baitadi	6. Dasharathchanda	1997 (2053)	16,791	84.3
6. Dadeldhura	7. Amargadhi	1997 (2038)	21,245	89.0
Tarai				
7.Kailali	8. Dhangadhi	1976 (2033)	101,970	101.8
	9. Tikapur	1997 (2053)	56,127	92.0
	10. Lamki-Chuha	2014 (2071)	61,352	88.1
	11. Attariya	2014 (2071)	72,521	91.4
8. Kanchanpur	12. Bhimdatta	1977 (2034)	104,599	95.5
	13. Punarbas	2014 (2071)	43,996	86.3
	14. Belouri	2014 (2071)	53,544	90.6

Source: CBS 2003, 2014.

The average sex ratio in the municipalities in far-western region ranges from a maximum of 101.8 in Dhangadhi to a minimum of 83.3 in Sanfebagar (Achham). Dhangadhi is the only municipality with a sex ratio over 100. Seven out of 14 municipalities have sex ratios lower than 90. Long standing outmigration of males to India and recent migration to West Asia and Malaysia are a likely explanation for the low sex ratio in these municipalities. As noted earlier, a low sex ratio is also a characteristic of rural Nepal in general in recent years.

4.3 Urbanisation and urban growth in Nepal

4.3.1 Urban growth in general

Nepal's urban growth is primarily characterised by i) an increase in the number of municipalities, ii) an expansion in the urban area, and iii) a relatively steady increase in the urban population in the designated urban areas in the initial years, iv) a rapid increase of population in recent years, and v) consistent increases in the percentage share of urban population to the total population and rural population. Table 8 shows the changing number of urban areas, their population size and percentage share of the urban population from the 1952/54 census to the 2011 census. Over the last 60 years the number of urban places or municipalities has increased from 10 in the 1950s to 130 in 2014. The population size has increased from 238,275 to 4,523,820 (including institutional population) i.e., an increase by 19 times by 2011. With new municipalities in 2014, the population increase over the decades is more than 30 fold.

Table 4.8: Urban places, population sizes and per cent share of urban population, 1952/54- 2014

Year	No. of urban places (municipalities)	Population size	Urban population as percentage of	
			Total population	Rural population
1952/54	10	238,275	2.9	3.0
1961	16	336,222	3.6	3.7
1971	16	461,938	4.0	4.2
1981	23	956,721	6.4	6.8
1991	33	1,695,719	9.2	10.1
2001	58	3,227,879	13.9	16.2
2011	58	4,523,820	17.1	20.6
2014*	130	7,199,514	27.2	37.3

Note. 1. Government of Nepal declared 72 additional (new) municipalities on May 8, 2014 by re-organising 283 Village Development Committees (VDCs). These 72 municipalities were part of the VDCs during the undertaking of the Population and Housing Census 2011.

2. Although 72 municipalities were added recently the combined urban population refers to the population census of 2011.

3. Unless stated otherwise, the urban population in 2014 refers to the non-institutional population only.

Source: CBS 1995, 2003, 2014.

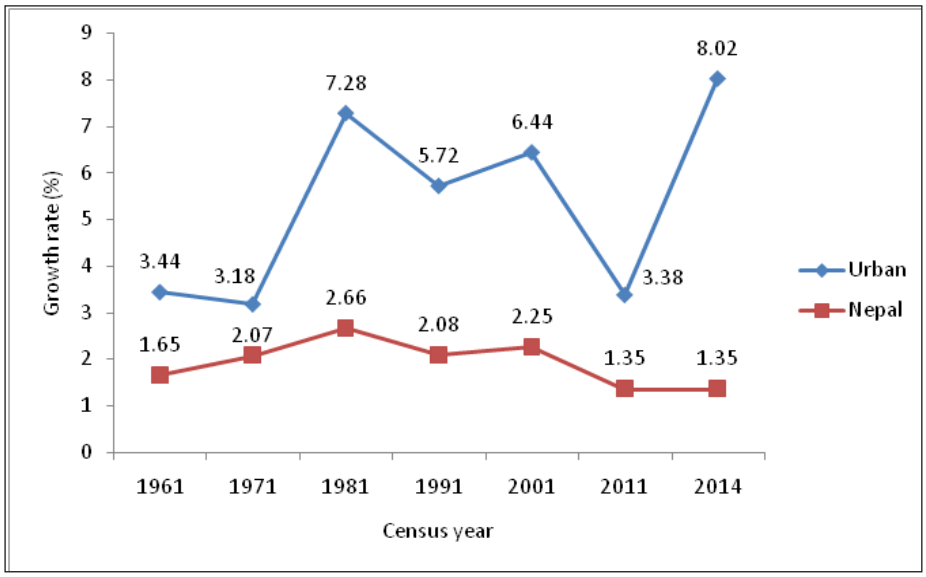
The level of urbanisation measured as a percentage of people living in urban areas has increased steadily from the 1950's to 2001. From 2001 to 2011 there was an addition of approximately 1.3 million people in 58 urban places common to both censuses. With new municipalities there has been an increase of more than 2.6 million people. The urban population as a percentage of the total population of the country reached 27.2% by 2014 and with new declarations there has been an in situ urbanisation of 10%. Following a similar pattern, the urban population as a percentage of the rural population reached 37.3% in 2014 and when only 58 municipalities are taken into account, it reached 20.6% in 2011. Since urbanisation is considered as one of the significant indicators of development and that development is the most warranted issue of the country, all these urban related changes suggest a positive growth of the country as a whole.

4.3.2 Urban population growth rates

A general characteristic of the population in less developed countries is that urban growth rates are far higher than their national averages. Nepal is not an exception. From the census data since 1961 it is obvious that population growth rates of urban places are far higher than the national average growth rates (Figure 4.1). However, the direction change i.e., ups and downs, normally follow the national trend. On average the gap between the urban population growth rate and the national growth rate is 3.4 percentage points. It ranges from 1.11 percentage points in 1971 to as high as 6.67 percentage points in 2014. It is however, to be noted that the higher gaps between national and urban growth rates are largely explained by the increase in the number of urban places compared with the census of 2011. For example, in 1971 there were 16 urban places and 7 more were added to the list in 1981. In the meantime some wards or VDCs adjacent to existing municipalities were annexed in the respective municipality e.g. Pokhara, and Kathmandu. Likewise in 1991 there were 33 (30+3) municipalities and by 2001 the

number reached 58. Furthermore, in 2014, after the census results were published, an additional 72 municipalities were declared increasing the total number of urban places to 130.

Figure 4.1: Growth rates of urban and national total population, 1961-2011



A note of caution is that the growth rates are not strictly comparable over the census years because of the increase in the number of municipalities over census periods and the annexation of adjacent VDCs or VDC wards in the successive censuses. Therefore, these figures should be taken as an overall trend of the direction of urban growth in the country.

4.4 Spatial pattern of urbanisation

This section discusses spatial patterns of urbanisation at two levels. First it discusses the distribution pattern at the regional level, both ecological and development regions. No separate discussion of ecological and development regions is made for reasons of convenience and also because there are not many urban areas in the mountains that deserve separate discussion. Second, it discusses the urbanisation pattern by districts.

4.4.1 Urbanisation by ecological and development regions

As Nepal is made up of diverse landscapes ranging from plain, valleys and tars, and hills and mountains, the pattern of population concentration varies by type of landscape. Human settlement patterns in Nepal to date are largely governed by the availability of fertile (plus flat) land, which is normally available in the plains and in the valleys; the lowlands or plains are more densely settled than the hills and mountains. Urbanisation on the other hand is largely associated with population concentration rather than general population distribution. Therefore, by population concentration it is quite natural to have more urban localities in the plains and valley areas than in the hills and mountains. Nepal's current distribution of municipalities clearly reflects this.

Table 4.9 shows the distribution of 130 municipalities by ecological and development regions. There is spatial inequality in the distribution of municipalities in terms of both ecological regions and development regions. The level of inequality is far higher in respect to ecological regions than development regions. Ecologically, 54% of municipalities are located in the Tarai, 40 % in Hills and only 6% in Mountain. With respect to development regions, eastern region ranks first with 28.5% (37 municipalities), closely followed by central region with a share of 27%. Western region has one-fourth of the nation's total municipalities while Far-west and Mid-west trail behind with their shares at 9% and 11% respectively.

Table 4.9: Distribution of municipalities by regions, 2014

Ecological regions		Development regions					Total	
		EDR	CDR	WDR	MWDR	FWDR.	No	Per cent
Mountain		3	2	0	1	2	8	6.1
Hill		11	14	17	5	5	52	40.0
Tarai		23	19	15	6	7	70	53.9
Nepal	No.	37	35	32	12	14	130	100
	%	28.5	26.9	24.6	9.2	10.8		100

Source: CBS, 2014.

The regional imbalance in urban population distribution is much greater than the imbalance in the distribution of municipalities by number. Table 10 shows the distribution of the urban population and its respective share by both types of regions. Ecologically, similar to its share in the number of municipalities, Tarai has the largest proportion of the urban population. Fifty four per cent of the urban population live in different categories of municipalities in Tarai. Hill has almost 44% of the urban population (higher than its share in number of municipalities) and the share of Mountain is minimal at 2.3%. This lowest share in Mountain is a reflection of the fact that it only has a few municipalities as well as a smaller population size in those municipalities. The increase in the share of Hill of the urban population compared to its number of municipalities is primarily because two of the largest municipalities (Kathmandu, Pokhara) and the larger urban areas of the Kathmandu valley lie in Hill.

Table 4.10: Distribution of urban population by regions, 2014

Region		EDR	CDR	WDR	MWDR	FWDR	Total	
							No	%
Mountain		70,121	38,143	0	19,047	41,077	168,388	2.3
Hill		289,172	1,790,096	761,582	208,971	102,841	3,152,662	43.8
Tarai		1,209,109	1,048,962	768,954	357,330	494,109	3,878,464	53.9
Nepal	No.	1,568,402	2,877,201	1,530,536	585,348	638,027	7,199,514	100
	%	21.8	40.0	21.3	8.1	8.9		100

Source: CBS 2014.

By development regions, there is a high level of concentration of the urban population in the central region. Every two out of five urban population lives in central region. This is because Kathmandu valley municipalities and other large sized urban areas in Chitwan and Parsa are located in this region. The share of eastern and western region is almost identical despite more municipalities in eastern region. The shares of mid-western and far-western regions are far lower. Mid-western region has the lowest share of urban population in the country. This is also a region with the lowest number of municipalities and the highest number of mountain districts with a small population size.

Table 4.11 shows urbanisation by ecological regions. Kathmandu valley is by far the most urbanised area with 57% of the urban population living in 5 municipalities of various categories. However, in a three-fold classification of ecological regions, Tarai appears as the most urbanised region with its urbanisation at 29%. Urbanisation levels of Hill in general are only slightly above the national average. Mountain region is lagging in respect of the number of urban areas and the level of urbanisation. Less than 10% of the urban population in Mountain live in eight designated municipalities.

Table 4.11: Urbanization by ecological regions, 2014

Ecological region	Number of Municipalities	Urban population	Total population	Percent urban
Mountain	8	168,388	1,781,792	9.5
Hill including Kathmandu valley	52	3,152,662	11,394,007	27.7
Kathmandu valley	5	1,426,641	2,517,023	56.7
Hill excluding KV	47	1,726,021	8,876,984	19.4
Tarai	70	3,878,464	13,318,705	29.1
Nepal	130	7,199,514	26,494,504	27.2

Source: CBS 2014.

4.4.2 Urbanisation by Districts

As noted earlier only 62 out of 75 districts have urban areas. Among them the number of municipalities ranges from a low of one to a high of seven. Whereas, districts with a single municipality are located in Mountain and Hill, the Tarai districts have more municipalities. Parsa is an exception where there is only one municipality. Likewise, Sankhuwasabha in Mountain is also an exception where there are two municipalities, Khandbari and Chainpur. Of all the districts Kaski is the most urbanised district in the country. About 64% of its population live in two municipalities, Pokhara (sub-metropolitan) and Lekhnath. Kaski superseded Kathmandu in 2014. In 2001 about 52% of people in Kaski lived in urban areas. Kathmandu ranked highest in 2001 with its urbanisation level at 66% but by 2011 this decreased to 60%. However, most of the current VDCs in Kathmandu district qualify for municipality by population and other criteria (i.e., national standard) adapted to declare 72 municipalities on May 8, 2014.

The overall level of urbanisation in eastern development region is 28.1%, which is about one percentage point higher than the national average. Table 4.12 shows the urbanisation level of districts located in the eastern development region. Five districts have an urbanisation level above the national average and 32 are below the national average. The districts with urbanisation above the national average in the region have larger urban population sizes, so the region's urbanisation level is above the national average. Morang has the highest urbanisation level followed by Udayapur, Jhapa and Sunsari respectively. The urbanisation level of Sankhuwasabha, one of the two mountain districts with urban areas, is higher than all the hill districts in the region, except Udayapur.

Table 4.12: Eastern development region: urbanization by districts, 2014

District	Number of municipalities	Urban population	Total population	Percentage urban
Mountain				
1. Taplejung	1	19,085	127,461	15.0
2. Sankhuwasabha	2	51,036	26,301	32.2
Hill				
3.Panchthar	1	24,768	191,817	12.9
4. Ilam	2	45,673	290,254	15.7
5. Bhojpur	1	16,102	182,459	8.8
6. Terhathum	1	19,659	101,577	19.4
7. Dhankuta	1	26,440	163,412	16.2
6. Khotang	1	17,793	206,312	8.6
7. Okhaldhunga	1	16,696	147,984	11.3
8. Udayapur	3	122,041	317,532	38.4
Tarai				
9. Jhapa	6	296,300	812,650	36.5
10. Morang	7	426,780	965,370	44.2
11. Sunsari	4	261,582	763,487	34.3
12. Saptari	3	116,636	639,284	18.2
14. Siraha	3	107,811	637,328	16.9
Total	**37**	**1,568,402**	**5,573,228**	**28.1**

Source: CBS 2014.

With 30.6% of its population living in urban areas, central development region ranks second in the country in terms of urbanisation. Kathmandu, Bhaktapur, Lalitpur, Chitwan and Makwanpur are among the top five districts with high levels of urbanisation in the region respectively (Table 4.13). More than 45% of people live in urban areas in the districts of Kathmandu, Bhaktapur, Lalitpur, and Chitwan. The urbanisation level in the region is below the national average for 12 of the 17 districts designated as urban areas. Sindhupalchok has the lowest level of urbanisation with only 5.4% of its population in the district living in its only municipality (Chautara). Apart from Sindhupalchok, other districts with low levels of urbanisation in the region are Mahottari (8.9%), Nuwakot (9.6%), Dhading (11.8%), Dolakha (12.1%) and Rautahat (15.6%). Despite a large number of districts with low levels of urbanisation, this region has urbanisation levels above the national average because the urban population size in valley districts and districts with high urbanisation is large. On the contrary, districts with low urbanisation level have a small population size so their contribution in shaping urbanisation at the regional level is very low.

Table 4.13: Central development region: urbanization by districts, 2014

District	Number of municipalities	Urban population	Total population	Percentage urban
Mountain				
1. Dolakha	1	22,537	186,557	12.1
2. Sindhupalchok	1	15,606	287,798	5.4
Hill				
3. Sindhuli	1	39,413	296,192	13.3
4. Kavrepalanchok	3	100,252	381,937	26.2
5. Bhaktapur	2	164,784	304,651	54.1
6. Lalitpur	1	220,802	468,132	47.2
7. Kathmandu	2	1,041,055	1,744,240	59.7
8. Nuwakot	1	26,750	277,471	9.6
9. Dhading	1	39,578	336,067	11.8
10.Makwanpur	2	157,462	420,477	37.4
Tarai				
11. Dhanusha	3	186,529	754,777	24.7
12. Mahottari	2	55,644	627,580	8.9
13.Sarlahi	4	139,181	769,729	18.1
14. Rautahat	2	106,996	686,722	15.6
15. Bara	3	161,528	687,708	23.5
16. Parsa	1	135,904	601,017	22.6
17. Chitwan	4	263,180	579,984	45.4
Total	**34**	**2,877,201**	**9,411,039**	**30.6**

Source: CBS 2014.

Western development region has the highest urbanisation level. Table 4.14 shows the level of urbanisation in the western development region by districts. Approximately 31% of people in the region live in urban areas. Kaski, the district with the highest urbanisation level, lies in this region. Ten out of 14 districts have urbanisation levels below the national average and only four districts have levels above

the national average. Rupandehi and Nawalparasi are two other districts with urbanisation levels at more than 37%. Gulmi (10.3%), Baglung (10.9%), Gorkha (12.0%), Lamjung (15.9%) and Kapilvastu (17.6%) are districts with low levels of urbanisation.

Table 4.14: Western Development Region: urbanization by districts, 2014

District	Number of municipalities	Urban population	Total population	Percentage urban
Hill				
1.Gorkha	1	32,473	271,061	12.0
2. Lamjung	1	26,640	167,724	15.9
3. Tanahu	3	96,797	323,288	29.9
4. Kaski	2	314,281	492,098	63.9
5. Syangja	3	67,452	289,148	23.3
6. Myagdi	1	28,511	113,641	25.1
7. Baglung	1	29,360	268,613	10.9
8. Parbat	1	32,419	146590	22.1
9. Gulmi	1	28,736	280160	10.3
10. Palpa	2	64491	261180	24.7
11. Arghakhanchi	1	40,422	197632	20.5
Tarai				
12. Nawalparasi	6	243,727	643,508	37.9
13. Rupandehi	6	424,416	880,196	48.2
14. Kapilvastu	3	100,811	571,936	17.6
Total	**32**	**1530536**	**4906775**	**31.2**

Note: None of the mountain districts of western development region has a municipality.
Source: CBS 2014.

The level of urbanisation is low in the mid-western development region by national standards and only 22% of the population live in urban areas (Table 4.15). Of the eight districts with an urban area, only one district Banke, has an urbanisation level on a par with the national average. However, despite a low level of urbanisation, the inter-district differences are lower than in any other regions. Four districts, Salyan, Pyuthan, Jumla and Dang are among districts with very low levels of urbanisation with less than 20% of their population living in urban areas. This is also the region where the least number of municipalities were declared in 2014.

Table 4.15: Mid-western development region: urbanization by districts, 2011

District	Number of municipalities	Urban population	Total population	Percentage urban
Mountain				
1. Jumla	1	19,047	108,921	17.5
Hill				
2. Pyuthan	1	38,536	228,102	16.9
3. Salyan	1	33,730	242,444	13.9
4. Dailekh	2	51,567	261,770	19.7
5. Surkhet	1	85,138	350,804	24.3
Tarai				
6. Dang	2	114,465	552,583	20.7
7. Banke	2	134,680	491,313	27.4
8. Bardiya	2	108,185	426,576	25.4
Total	**12**	**585,348**	**2,662,513**	**22.0**

Source: CBS, 2014.

The urbanisation status of far-western region is relatively better than the mid-west but by national standard its level is low. Only 26.4% of the population of this region live in designated urban areas (Table 4.16). Of all five development regions, this region has the lowest sized urban population. Table 4.16 shows the level of urbanisation by districts in the region. Of the nine districts, Bajura is the only district that does not have a municipality. Among eight districts with one or more municipalities, only two Tarai districts, Kailali and Kanchanpur, have a population that exceeds the national average. Dadeldhura, with an urban population of 6.7%, is the district with the lowest level of urbanisation in the region.

Table 4.16: Far-western region: urbanization by districts, 2011

District	Number of municipalities	Urban population	Total population	Percentage urban
Mountain				
1. Bajhang	1	20,280	195,159	10.4
2. Darchula	1	20,797	133,274	15.6
Hill				
3. Achham	2	41,389	257,477	16.1
4. Doti	1	23,416	211,746	11.1
5. Baitadi	1	16,791	250,898	15.0
6. Dadeldhura	1	21,245	142,094	6.7
Tarai				
7.Kailali	4	291,970	775,709	37.6
8. Kanchanpur	3	202,139	451,248	44.8
Total	**14**	**638,027**	**2,417,605**	**26.4**

Source: CBS 2014.

In general, despite an increase in the number of urban areas, the population size and area coverage, Nepal's urbanisation level is largely controlled by a few "large" urban areas. The increase in the number of municipalities is an important contributor but more important is the population size relative to the total population of the respective district or region. Furthermore, urbanism and the functional character of urban areas are yet to be analysed to provide meaningful urbanisation and international comparison.

Map 4.1 shows the location of 130 municipalities on the map of Nepal[6]. Four observations are noteworthy. Firstly, most of the municipalities are located along east-west or north-south highways. Secondly, many of them are located either in the foothills or on the northern part of the Tarai and are close to the Churia forests. Thirdly, Nepalese urbanisation continues to be south oriented showing the relative concentration in the Tarai. Fourthly, with newly designated municipalities, the regional inequalities have widened in terms of number and distribution of municipalities.

Map 4.2 (Annex 4.1) shows the distribution of municipalities in the eastern development region. There is a concentration of municipalities in the Tarai and the newly designated ones are also concentrated in two Tarai districts, Morang and Jhapa. Solukhumbu is the only district in this region without a municipality.

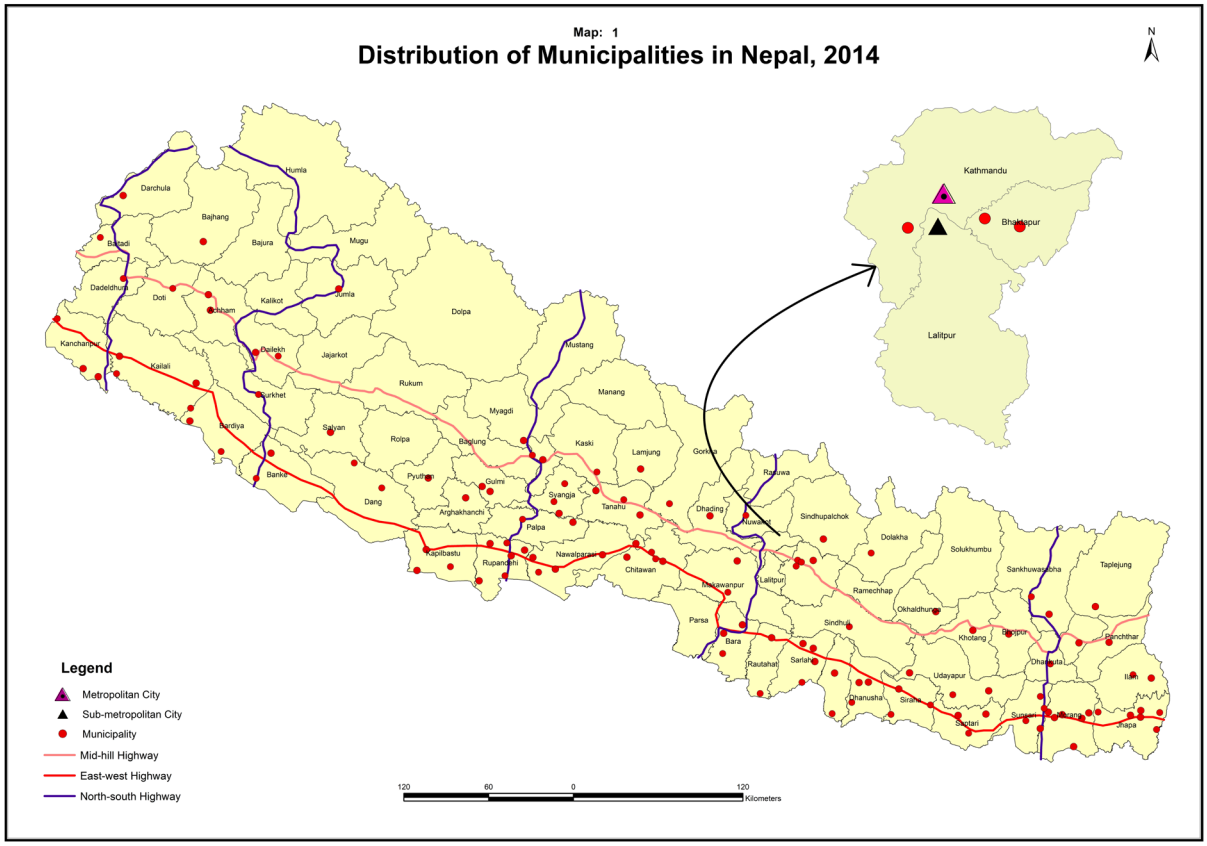
Map 4.3 (Annex 4.2) shows the distribution of old and new municipalities in the central development region. Rasuwa and Ramechhap districts do not have a single municipality. The high level of concentration in Kathmandu and its surroundings is expected .

Map 4.4 (Annex 4.3) shows the distribution of old and new municipalities in the western region. Manang and Mustang districts do not have a municipality. In western region, unlike eastern and central development regions, urban areas seem to be rather scattered in the region.

Map 4.5 (Annex 4.4) and Map 4.6 (Annex 4.5) shows the locational distribution of municipalities in the mid-western and far-western regions respectively. Of all the regions, mid-western development region has more districts without a municipality than any other development region. At least four municipalities there are located very close to the Mid-hill highway.

6 The author would like to thank Mr. Krishna Prasad Timalsina, Lecturer at Tri-Chandra Multiple Campus, Kathmandu for his help in preparing maps included in this Chapter.

Map 4.1:


Map: 1
Distribution of Municipalities in Nepal, 2014
N
Kathmandu
Bhaktapur
Lalitpur
Humla
Darchula
Bajhang
Bajura
Mugu
Baitadi
Dadeldhura
Doti
Achham
Kalikot
Jumla
Dolpa
Kanchanpur
Dailekh
Jajarkot
Mustang
Kailali
Rukum
Manang
Surkhet
Myagdi
Bardiya
Salyan
Rolpa
Baglung
Kaski
Lamjung
Gorkha
Banke
Pyuthan
Gulmi
Dang
Arghakhanchi
Tanahu
Dhading
Rasuwa
Nuwakot
Sindhupalchok
Palpa
Kapilbastu
Rupandehi
Nawalparasi
Chitawan
Makawanpur
Lalitpur
Dolakha
Solukhumbu
Ramechhap
Okhaldhunga
Sankhuwasabha
Taplejung
Parsa
Bara
Rautahat
Sarlahi
Sindhuli
Khotang
Bhojpur
Panchthar
Udayapur
Dhanusha
Siraha
Dhankuta
Ilam
Sunsari
Morang
Jhapa
Legend
Metropolitan City
Sub-metropolitan City
Municipality
Mid-hill Highway
East-west Highway
North-south Highway
120
60
0
120
Kilometers

4.4.3 Changes in regional urbanisation

The population size of the country has changed (increased) noticeably over the last 30 years. In 1981 Nepal's total population was 11.6 million, which increased to 26.5 million by 2011. Correspondingly the urban population has increased from about one million in 1981 to 7.2 million in 2011. The pace of change or increase in the urban population is more rapid than the pace of change of the total population in the country. Table 4.17 shows the change in the urban population at the national and regional level since 1981. Since there were no designated urban area in the mountain until 1991, a comparison is only possible for the last two censuses. In the case of other regions, a comparison for the last four censuses is possible and is also meaningful because by 1981 there were a sizeable number, 23 municipalities (nagar panchayat), in the country. As a capital region, Kathmandu valley has played a significant role in the overall growth of the urban population in the country. The valley, as part of hill region, has disguised generalisations about this region. Therefore, Kathmandu valley (KV) is presented separately.

By 2014, Tarai had an urban population of almost 3.9 million. Over the last four censuses, the urban population has increased by 8.4 fold. Of the three ecological regions, Tarai has the highest number of urban population in the country. Until 1991 Hill (including KV) had numerical domination of the urban population but the last censuses have shown its dominance in Hill and Mountain. The urban population has increased in Hill as a whole. It has increased from 0.5 million in 1981 to 3.15 million in 2014 i.e., an increase of 6.4 fold. Within Hill, Kathmandu valley is unique and its growth over the same period has been 3.6 fold. This increase does not appear impressive numerically compared with the Tarai and Hill in general at this point in time. However, since most of the VDCs in the valley qualify to be designated as urban areas by Hill standards, and that the process to do so is underway (personal communication with officials of Ministry of Federal Affairs and Local Development), this figure needs to be interpreted with caution. In this case, Kathmandu valley undoubtedly demonstrates the highest increase in the urban population in the country.

Table 4.17: Regional changes in urban population, 1981-2011

Census year	Mountain	Hill*	Kathmandu valley	Tarai	Nepal
1981 (23)	0	132,027	363,507	461,187	956,721
1991 (33)	0	269,367	598,528	827,824	1,695,719
2001 (58)	43,705	720,311	995,966	1,467,897	3,227,879
2011 (130)	168,388	1,726,021	1,426,641	3,878,464	7,199,514

*Note: * Excluding Kathmandu Valley.*
Figures in parenthesis refer to number of municipalities in the respective census year.
Source: Population Censuses, 1981,1991, 2001, and 2011.

Although Hill (excluding Kathmandu valley) has far less than half of Tarai's urban population at present, there has been a significant increase in its urban population, the highest of all regions. Between 1981 and 2014 its urban population has increased from 132,000 to more than 1.7 million, an increase of more than 13 fold. Mountain region has also observed noticeable gains in the urban population in recent years. It is to be noted that all these gains are primarily attributed to the increase in the number of municipalities between intercensal periods. The role of internal growth of the population is expected to be low. Compared with the population of additional municipalities in the respective regions, the role

of migration is also likely to be less important. However, detailed analysis about the role of migration is beyond the scope of this chapter.

Changes in regional urbanisation are equally evident in the development regions. Table 4.18 shows such changes in regard to the urban population as a percentage of the respective regional population and the percentage share of the total urban population. Of all the development regions, western region shows the highest increase in its level of urbanisation. From 1991 to 2011, its urbanisation level has increased by 5.5 fold and it now stands as the region with the highest urbanisation level in the country. Although the mid-west's current level of urbanisation is the lowest, its growth is noteworthy. From 1991 to 2011, its urbanisation level has increased from 4.1% to 16.7%, a four-fold increase. The pace of increase in the eastern and far-western region is similar i.e., an increase by 3.5 fold each, but the level of urbanisation in eastern region has always remained high. Central development region had the highest urbanisation level until 2001 but western region ranked above it in 2014.

Table 4.18: Changes in urbanization level by development regions

Development regions	urban population as percentage of respective regional population			Percentage share in the nation's urban population		
	1991	2001	2011	1991	2001	2011
Eastern	7.8	11.7	27.0	20.3	19.4	21.8
Central	14.9	20.0	29.8	54.4	49.7	40.0
Western	5.6	11.4	31.1	12.4	16.1	21.3
Mid-western	4.1	7.7	16.5	5.9	7.2	8.1
Far-western	7.1	11.2	25.0	7.0	7.6	8.9

Source: Population Censuses, 1991, 2001, and 2011.

Central development region has been consistently leading in its share of the country's urban population but its share has been consistently decreasing over successive censuses. In 1991 more than 54% of urban people in the country lived in central region. Because of an increase in the number of urban areas with similar growth in general and population increases in urban areas of the Tarai and other development regions, its share of the country's urban population declined to about 50% in 2001 and further to only 40% in 2014. Eastern region shows a slight decline in its overall share in 2001 but has picked up by 2014. Western, mid-western and far-western regions vary in their proportional share of the urban population but all of them show a steady increase over the census periods.

4.5 Urban distribution and growth by size class

4.5.1 Current distribution

The distribution of the urban population by class size and respective growth indicates the scale and nature of urbanisation in the country. Table 4.19 shows the distribution of municipalities and their respective population by size class by seven class-sizes for 2014. By number, Nepal's urbanisation is dominated by small sized urban areas but by population it is dominated by size classes over 50,000 populations. In number, 25% of municipalities belong to the size-class of 20,000-29,999 and nearly 22% to the 50,000-99,999 people. Likewise, about 11% of municipalities have population sizes below

20,000 and only 3% have over 200,000 people. Furthermore, one out of five has a population between 30,000-39999 people.

Table 4.19: Size class distribution of municipalities and their population

Size class distribution	Municipalities		Population	
	No.	Per cent	Size	Per cent
200000 and plus	4	3.1	1,652,845	23.0
100000-199999	7	5.4	873,598	12.1
50000-99999	28	21.5	1,895,554	26.3
40000-49999	19	14.6	850,327	11.8
30000-39999	25	19.2	855,406	11.9
20000-29999	33	25.4	833,353	11.6
Less than 20000	14	10.8	238,431	3.3
Total	130	100	7,199,514	100

Source: CBS, 2014.

As noted earlier, the average population size of Nepalese urban centres is 55,381. But out of a total of 130 urban areas, 95 have less than the average population size and only 35 have more. Municipalities with population sizes over 100,000 accounts for 35% of the total urban population. In particular, the share of cities with 200,000 or more population is 23%. The largest share in urban population is contributed by municipalities with a class size of 50,000 to 99,999. Municipalities with less than 20,000 have a minimal share of the total urban population (3.3%). If 50,000 populations are arbitrarily taken as the divide, those above this figure have a 61.4% share and those below have a 38.6%, which is about a sixty-forty proportion.

4.5.2 Changes in size class distribution

Changes have taken place in the size class distribution of urban places or municipalities over the decades and these changes are quite noticeable in the case of size classes 20,000 to 49,999 and 50,000 to 99,999. Table 4.20 shows the changes in size class distribution for five classes and by number of municipalities, their population and percentage share of the population. These changes are shown for four censuses from 1981 to 2011. In 1981, the largest share of the urban population (48%) was made up by 13 municipalities of size class 20,000-49,999, and 25% by the capital city. By 1991 while the share of capital city remained constant, the share of eight municipalities of size class 50,000-99,999 emerged dominant (31%) and 14 municipalities of size class 20,000-49,999 decreased to 17%. Two municipalities went up the ladder of size class to 100,000-199,999 people and the number of municipalities went up from 23 to 33.

Table 4.20: Size class distribution of municipalities and their growth, 1981-2011

Census year		Size class distribution				
		200000 and plus	100000-199999	50000-99999	20000-49999	Less than 20000
1981	No.	1	-	2	13	7
	Pop.	235,160	-	173,419	457,569	90,573
	%	24.6	-	18.1	47.8	9.5
1991	No.	1	2	8	14	8
	Pop.	421,258	245,253	517,419	293,888	217,901
	%	24.8	14.5	30.5	17.3	12.9
2001	No.	1	4	11	34	8
	Pop.	671,846	598,191	788,937	1,032,245	136,390
	%	20.8	18.6	24.4	32.0	4.2
2011	No.	4	7	28	77	14
	Pop.	1,652,845	873,598	1,895,554	2,539,086	238,431
	%	23.0	12.1	26.3	35.3	3.3

Source: Population Censuses, 1991, 2001, and 2011.

By 2001 the share of the capital city had decreased to 21% but the share of 4 municipalities with size class 100,000 -199,999 people increased to almost 19%. In a similar manner, the share of 20,000-49,999 increased and that of size class 50,000-99,999 decreased from 31% to 24%. The 2011 census shows an increase in the share of size class of 20,000-49,999 to more than 35% and that of size class 50,000-99,999 a little over 26%. In the same way, the share of 4 municipalities with greater than 200,000 population went up to 23%. Kathmandu, Pokhara, Lalitpur, Biratnagar exceeded the 200,000 population by 2011. By 2001 Pokhara, Biratnagar, Lalitpur and Birgunj had more than 100,000 populations. Among them with the exception of Birgunj, all of them had crossed the 200,000 threshold by 2011.

4.5.3 Growth rates by size class distribution

The overall growth rate of the urban population between 2001 and 2011 was 8%, the highest national average in the history of Nepal's urbanisation. However, this growth rate should be understood in the context of the designation of 72 new municipalities in 2014. In addition, this growth rate is not uniform by size class distribution of the urban population. The highest growth rate is recorded for size class 20,000-49,999. This size class recorded almost a 9% annual growth rate and this growth is largely due to the designation of the largest new municipalities within this population bracket. The lowest growth is recorded for municipalities belonging to size class of less than 20,000. The municipalities with population sizes 100,000 or more also recorded high growth rates (6.9%). These are very high growth rates given that the nation's total population during this period grew by only 1.35% per annum.

Between 1991 and 2001 the highest growth rate was recorded for the size class of 20,000-49,999 (Table 4.21). The same size class recorded the highest growth rate during 2001-2011. Notably, this is the only size class that exceeded the average urban growth rate of the country during this intercensal period. On the contrary, the growth rate for the size class less than 20,000 remained negative. Of the four intercensal periods referenced here (Table 4.21), for the size class 50,000-99,999, the lowest growth rate was recorded during this period. During 1981-1991 larger size classes recorded very high growth

rates (greater than 10%) while the size class 20,000-49,999 recorded a negative growth rate. Unlike other intercensal periods, not many new municipalities were added during this period.

Table 4.21: Intercensal growth rates of urban population by size class distribution, 1971-2011

Size class distribution	Intercensal growth rates			
	1971-81	1981-91	1991-01	2001-11
100000 +	4.46	10.42	6.44	6.87
50000-999999	10.76	10.91	4.21	8.75
20000-49999	11.15	-4.4	12.54	8.99
<20000	-1.25	8.77	-4.68	5.58
Average urban growth rate	7.28	5.72	6.44	8.02

Source: Respective Population Censuses.

During 1971-81 two size classes, specifically 20,000-49,999 and 50,000-99,999, recorded high growth rates, while the less than 20,000 size class recorded a negative growth rate. The capital city grew at the rate of 4.5% per annum during this period. Over all the intercensal periods, 2001-2011 and 1971-1981 have shown higher growth rates of the urban population in the country and both these scenarios reflect the designation of new municipalities in between these years.

4.5.4 Changes in ranking of municipalities between 1981 and 2014

Kathmandu, the only metropolitan so far, ranked highest in the ranking of urban places in 2011. As a capital city it continues to be in first place in all censuses, whereas Lalitpur has maintained third place since 1981. Pokhara, which ranked fourth in the 1991 and 2001 censuses, emerged as the second largest municipality in the country by 2011, taking over the position of Biratnagar, which had ranked second in 1981, 1991 and 2001. Among the top 15 urban places, 11 are from the Tarai and only four from Hills, two from Kathmandu valley and two from outside the valley. Table 4.22 presents the relative ranking of urban places for the last four censuses.

Table 4.22: Ranking of urban places by population size over successive censuses, 1981-2011

Ranking	1981	1991	2001	2011
1	Kathmandu	Kathmandu	Kathmandu	Kathmandu
2	Biratnagar	Biratnagar	Biratnagar	Pokhara
3	Lalitpur	Lalitpur	Lalitpur	Lalitpur
4	Bhaktapur	Pokhara	Pokhara	Biratnagar
5	Pokhara	Birgunj	Birgunj	Bharatpur
6	Bhimdatta	Dharan	Dharan	Birgunj
7	Birgunj	Bhimdatta	Bharatpur	Hetauda
8	Dharan	Bhaktapur	Bhimdatta	Dharan
9	Janakpur	Janakpur	Butwal	Butwal
10	Hetauda	Bharatpur	Janakpur	Bhimdatta
11	Nepalgunj	Hetauda	Bhaktapur	Dhangadhi
12	Siddharthanagar	Nepalgunj	Hetauda	Janakpur
13	Bharatpur	Dhangadhi	Dhangadhi	*Tilottama* (Rupandehi)
14	Dhangadhi	Butwal	Nepalgunj	Birendranagar
15	Butwal	Damak	Triyuga	*Gadhimai*
16	Ghorahi	Siddharthanagar	Siddharthanagar	Madhyapur Thimi
17	Rajbiraj	Ghorahi	Mechianagar	Bhaktapur
18	Birendranagar	Rajbiraj	Madhyapur Thimi	Damak
19	Dhankuta	Birendranagar	Gulariya	Itahari
20	Lahan	Lahan	Ghorahi	*Attariya*
21	Tansen	Bidur	Lekhnath	Nepalgunj
22	Ilam	Inaruwa	Itahari	*Chandrapur*
23	Bhadrapur	Kalaiya	Kirtipur	Triyuga
24		Jaleswor	Tikapur	Kirtipur
25		Kapilvastu	Ratnanagar	Siddharthanagar
26		Dhankuta	Damak	Ghorahi
27		Bhadrapur	Tulsipur	*Kohalpur*
28		Malangawa	Kamalamai	*Lamki-Chuha*
29		Tansen	Kalaiya	*Lumbini Sanskritik*
30		Ilam	Birendranagar	*Birtamod*
31		Banepa	Rajbiraj	Lekhnath
32		Dipayal	Putalibazar	Mechinagar
33		Dhulikhel	Byas	*Kawasoti*

(Table continues...)

(Table 4.22 continued...)

Ranking	1981	1991	2001	2011
34			Lahan	Tikapur
35			Kapilvastu	Gulariya
36			Prithvinarayan	*Gaidakot*
37			Panauti	*Belouri*
38			Gaur	*Rajapur*
39			Siraha	Tulsipur
40			Inaruwa	*Shivaraj*
41			Ramgram	*Pathari-Shanishchare*
42			Dipayal	*Kanchanrup*
43			Jaleswor	*Koshi-Haraicha*
44			Bhimeshwor	*Khairahani*
45			Khandbari	Ratnanagar
46			Bidur	*Mirchaiya*
47			Baglung	*Sainamaina*
48			Dhankuta	*Shani-Arjun*
49			Tansen	*Dhanushadham*
50			Waling	*Punarbas*
51			Narayan	*Chhireshwornath*
52			Malangawa	*Devdaha*
53			Amargadi	Byas
54			Dasharathchand	Kalaiya
55			Bhadrapur	*Harion*
56			Ilam	*Ishworpur (Sarlahi)*
57			Banepa	*Shandhikharka*
58			Dhulikhel	*Kankai*
59				Sunawal
60				Nilkantha
61				Kamalamai
Current rankings (2011) of remaining 26 out of 58 municipalities of 2001 are: Rajbiraj (64), Gaur (68), Lahan (72), Gorkha (74), Putalibazar (80), Kapilvastu (82), Baglung (84), Tansen (85), Inaruwa (89), Siraha (90), Panauti (92), Bidur (94), Dhankuta (97), Khandbari (98), Malangawa (101), Banepa (103), Waling (105), Jaleswor (107), Dipayal (108), Bhimeshwor (110), Amargadi (112), Narayan (113), Ilam (120), Bhadrapur (122), Dasharathchand (124) and Dhulikhel (129).				

Note: The new municipalities getting their entry into top 58 municipalities in 2011 are italicized.

Among the top 58 municipalities in 2011, 28 are new and 30 are older. Of the new 72 municipalities Tilottama is the largest and is ranked 13th from the top. Among the top 20 municipalities, three are new entries and among the top 30, eight are new entries. The rankings of existing municipalities have also changed. Notably, Bharatpur, Hetauda, Dhangadhi, Damak, and Itahari have moved up in rank and Bhimdutta, Nepalgunj, Dharan, Janakpur have moved down in rank. Most of the municipalities that have gained are either located along the east-west highway or at the crossroads of the north-south and east-west highways.

4.5.5 Components of urban growth

Table 4.23 shows the components of urban growth during the intercensal period 2001 and 2011. It is clear that reclassification is the main component contributing to the 39% of urban growth. The Government of Nepal's declaration of 72 new municipalities on May 8, 2014 added approximately 2.8 million people to the existing 4.4 million, making the total urban population 7.2 million. In between, the government also annexed 7 existing VDCs to adjacent municipalities. Panchakanya with a population of 16,901 was annexed in Dharan. Four VDCs namely Padampokhari (with a population of 17,086), Churiyamai (with a population of 14,274), Hatiya (with a population of 13,099), and Harnamadi (with a population of 6,615), were annexed in Hetauda municipality. Similarly, two VDCs namely Latikoili (with a population of 19,963) and Uttar Ganga (with a population of 17,261) were annexed in Birendranagar municipality. Together this annexation contributed to 1.5% of the total urban population.

Table 4.23: Components of urban growth during intercensal period 2001-2011.

Components	Total population	Percent share
Annexation	105,199	1.5
Internal migration	1,429,649	19.9
Immigration	162,363	2.3
Reclassification	2,793,469	38.8
Total	4,490680	62.5
urban population	7,199,514	Not applicable

Note: The working definition of migration used here is lifetime migration. As a result, many urban residents whose place of birth is different are repetitively counted as migrants over many censuses. Data on period migration and of vital rates of intercensal periods are necessary for calculation of the role of a natural increase in the overall urban growth. A different methodology has to be applied for this.

Migration in 58 municipalities contributed to 22% of urban growth. Internal migration (using district as a unit) contributed to 20% and international migration to 2.3%. It is to be noted that in the 58 municipalities, 36.1% of residents are migrants. Among them 32.4% of residents are internal (inter-district) migrants and 3.7% immigrants.

4.6. Urban social demography

4.6.1 Age distribution by broad age groups

Population distribution by broad age groups suggests that the urban population is mature. Table 4.24 shows the urban population by broad age groups. Children below 15 years made up 30.5 % of the urban population and the elderly population, 60 years and above, made up 7.4% of the urban population. The proportion of the economically active age population was 62.1%. The dependency ratio is 61.1, which is lower than the national average. At the national level the proportion of children is less than 35% and that of the elderly more than 8%. This suggests that it an opportunity for the urban population to benefit from this demographic dividend.

Table 4.24: Population distribution by broad age groups, 2011

Broad age groups	Both sexes		Male		Female	
	Number	Per cent	Number	Per cent	Number	Percent
0-14 yrs	2,196,913	30.5	1,139,523	15.8	1,057,390	14.7
15-59 years	4,467,970	62.1	2,133,696	29.6	2,334,274	32.4
60 years and over	534,631	7.4	259,215	3.6	275,416	3.8
Total	**7,199,514**	**100**	**3,532,434**	**49.1**	**3,667,080**	**50.9**

Source: CBS, 2014.

The average sex ratio of the urban population is 96.3, which is higher than the national average (94.2). By age groups, the sex ratio is high in ages 0-14 years (107.8), the only age group that has more males than females. The sex ratio is lowest in the economically active age group and lower in the elderly population. This lower sex ratio means females outnumber males in these age groups. On the one hand this is a reflection of selective outmigration and/or external migration of males, on the other it is symptomatic of changes taking place in society, especially in respect to the changing roles of females in the household.

4.6.2 Urban rural difference in age composition

Table 4.25 presents the age composition of the population by five year age group intervals for urban and rural areas. The distribution pattern in general is similar but the proportions are different. A common expectation of a high urban-rural difference in the age distribution pattern of the population is not reflected in Nepal's urban area. The differences are rather marginal except in a few instances. In both rural and urban areas the 10-14 year age group has the highest proportion with a gradual decline in the proportions of age groups after this. The share of the male population is higher in all age groups between 0-19 years. However, a few differences are notable. First, in rural areas there is a high concentration of the population in the age groups 0-14 years, while in urban areas there is high concentration in the age groups between 15-34 years. Second, in rural areas there is a higher proportion of the population in the older age groups than in urban area.

Table 4.25: Age distribution of urban and rural population

Age groups		Urban			Rural		
		Both sexes	Male	Female	Both sexes	Male	Female
00-04 Yrs.		8.0	8.6	7.5	10.3	10.9	9.8
05-09 Yrs.		10.5	11.1	9.9	12.7	13.3	12.1
10-14 Yrs.		12.0	12.6	11.4	13.5	14.2	12.9
15-19 Yrs.		11.5	11.8	11.1	10.9	11.0	10.8
20-24 Yrs.		10.3	9.6	11.0	8.4	7.6	9.1
25-29 Yrs.		8.9	8.0	9.9	7.4	6.8	8.0
30-34 Yrs.		7.6	7.0	8.1	6.2	5.6	6.7
35-39 Yrs.		6.8	6.6	7.1	5.8	5.5	6.1
40-44 Yrs.		5.7	5.8	5.6	5.1	4.9	5.2
45-49 Yrs.		4.6	4.7	4.5	4.4	4.4	4.4
50-54 Yrs.		3.8	3.9	3.6	3.8	3.9	3.7
55-59 Yrs.		2.9	3.0	2.8	3.2	3.3	3.0
60-64 Yrs.		2.6	2.6	2.6	3.0	3.0	2.9
65-69 Yrs.		1.9	1.9	1.8	2.2	2.3	2.1
70-74 Yrs.		1.3	1.3	1.3	1.6	1.6	1.5
75-79 Yrs.		0.8	0.8	0.9	0.9	0.9	0.9
80-84 Yrs.		0.5	0.5	0.5	0.5	0.5	0.5
85+ Yrs.		0.3	0.3	0.4	0.3	0.3	0.3
Total	**%**	**100**	**100**	**100**	**100**	**100**	**100**
	No.	**7,199,514**	**3,532,434**	**3,667,080**	**19,294,990**	**9,316,607**	**9,978,383**

Source: Based on Population and Housing Census, 2011.

4.6.3 Literary and levels of education completed

4.6.3.1 Literacy level

Of the total urban population 6.6 million is aged 5 years and above. Among them 3.4 million are female and 3.2 million are male. Overall literacy (5 years of age and over) in urban area is 77.3 % and 2% of people can only read. Male literacy is 85% and female literacy is 70.0% (Table 4.26). The literacy gap by sex is 15.0 percentage points. At the national level, the overall literacy rate is 65.9%. Male literacy is 75.1% and female literacy 57.4%. The literacy gap by sex is 17.7 percentage points. In 2001 overall urban literacy rates were 71.6% (Sharma, 2003).

Table 4.26: Urban literacy, 2011

Sex	Can read & write	Can read only	Can't read & write	Not stated	Total
Both sexes	77.3	2.0	20.7	0.1	100
Male	85.0	1.8	13.2	0.0	100
Female	70.0	2.1	27.8	0.1	100

Source: CBS, 2014.

A few observations are notable in this context. First, literacy levels in urban areas are higher than the national average, but in spite of expectations of a wider gap, the literacy rate is higher by only 4 percentage points. In other words, urban areas are not that much different in terms of literacy than the national average. Second, 30% of females in urban areas are illiterate i.e., more than one million. This is a serious issue in a country that has been reiterating the importance of education for decades. Third, 15% of males are illiterate. Compared with female illiteracy, this is not of such a concern, but this percentage is quite high by international standards. Fourth, gender gaps persist by nearly two digits. Fifth, the rate of improvement in literacy between 2001 and 2011 is far higher at the national level than in urban areas. For example, literacy at the national level increased by almost 12 percentage points i.e., from 54.1% to 65.9% but for the urban population it increased by less than 6%. Sixth, the gender gap in literacy has slightly narrowed to 15 percentage points compared to 18 percentage points in 2001.

4.6.3.2 Level of education completed

Table 4.27 shows the educational attainment among literates in urban areas. One third of the total literates have completed primary level only or are at the beginner level. The largest proportion was in the primary level. Overall, 64.4% have secondary level or lower educational attainment. Less than 8% are graduates or post graduates. Compared with 2001 (Sharma 2003) a few similarities and differences are notable. First, a category of beginner has been added as 5 years of age and above is included in the literacy calculations. Second, the largest proportion of literates has a primary level education only in both censuses. Third, the proportion of non-formal education in 2011 when equated with no schooling in 2001 has significantly decreased (from 7.7% to 2.9%). Fourth, the proportion in SLC & equivalent and Intermediate & equivalent shows some increase, 12.6% and 9.6% in 2001 to 13.4% and 10.4% in 2011 respectively. Fifth, the proportion of campus graduates and postgraduates together decreased from 8.3% to 7.6% but the proportion of postgraduates increased from 0.1% to 2.2%.

Table 4.27: Level of education completed (in percent)

Educational level completed	Male	Female	Both sexes
Beginner	3.5	3.5	3.5
Primary (1-5)	29.2	30.5	29.8
Lower Secondary	17.9	19.3	18.6
Secondary	12.2	12.8	12.5
SLC & equivalent	13.4	13.5	13.4
Intermediate & equivalent	10.8	10.0	10.4
Graduate & equivalent	6.6	4.3	5.5
Post graduate equivalent & other	2.9	1.2	2.1
Non-formal education	2.9	4.5	3.7
Level not stated	0.4	0.5	0.4
Other	0.1	0.1	0.1
Total	**100**	**100**	**100**

Source: CBS, 2014.

Educational attainment by sex shows a similar pattern of concentration in categories below SLC, tapering off towards higher education but there are differences in proportions. Overall, the differences are moderate except in the case of graduates and postgraduates. The largest proportion has primary level education only and the proportion in the case of females is higher by 1.3 percentage points. Similarly, whereas 59.3% of males have completed secondary level or less, the corresponding proportion is 62.6% for females. The proportion of graduates and postgraduates is 9.5% for males and only 5.5% for females. Furthermore, the proportion with non-formal education is higher among females than males. A comparison with 2001 suggests a decline in the proportion of graduates and postgraduates among males (from 10.7% to 9.5%) and a marginal improvement in the corresponding proportion among females (from 4.8% to 5.5%). More importantly, while the percentage of females with postgraduate level was zero in 2001 (Sharma 2003), 1.2% of females have completed post graduate or equivalent in 2011.

4.6.4 Marital status

Table 4.28 reveals the marital status of the urban population. There are 5.87 million urban population aged 10 years and above. Among them 2.84 million were males and 3.03 million were females. The proportion of ever married was 62.7% and that of never married was 37.3%. The "single married" or "married one time only during lifetime" constituted the highest proportion and was equally applicable to males and females. The proportion of single married was higher among females than males. On the contrary, although only a small proportion, incidences of multiple married and remarried were higher among males than females. On the contrary, the proportion of widows was higher than the proportion of widowers. The proportion of divorced was equal for both sexes while the proportion of separation was higher among females than males. Except for divorced and separated, sex differences in other categories are reflections of common practices of Nepalese society.

Table 4.28: Urban population by marital status (10 years of age and over)

Sex	Never married	Single married	Multiple married	Remarried	Widow/ widower	Divorced	Separated	Total
Both	37.3	57.0	1.2	1.2	2.9	0.1	0.2	100
Male	42.8	52.1	2.1	1.6	1.2	0.1	0.1	100
Female	32.1	61.6	0.4	0.8	4.6	0.1	0.3	100

Source: CBS, 2014.

4.6.5 Urban Population by Caste/ethnicity

The Population and Housing Census of 2011 reported 125 caste and ethnic groups living in the country and all of these caste/ethnic groups, except Dolpo, are represented in urban areas. Brahmin-hill is the largest group with more than 1.3 million people, whereas Topkegola is reported to be the smallest group with only 57 people. Chhetree is the second largest group with more than 1.1 million people. Table 4.29 shows the main caste/ethnic groups and their relative size. Similar to the national scenario, Brahmin-hill and Chhetree are the two groups with larger population sizes in urban areas. However, their proportion is 34.4% in urban areas against 28.8% at the national level and Brahman comes out as number one, while this is the opposite at the national level. Newar is the third largest group. Tharu, Magar, Tamang and Kami are the fourth, fifth sixth and seventh ranking caste/ethnic groups. Musalman comes next. These 7 groups together make up 69% of the total urban population. When Gurung, Rai,

Yadav, Damai/Dholi, Thakuri and Limbu are added together, these 14 groups make up 80% of the country's total urban population.

Table 4.29: Urban population by caste/ethnicity, 2011

Caste/ethnic group	Population size	Percentage share	Cumulative per cent
Brahman – Hill	1,332,810	18.5	18.5
Chhetree	1,142,550	15.9	34.4
Newar	735,116	10.2	44.6
Tharu	468,041	6.5	51.1
Magar	409,138	5.7	56.8
Tamang	341,887	4.7	61.5
Kami	267,382	3.7	65.2
Musalman	267,318	3.7	68.9
Gurung	195,573	2.7	71.6
Rai	165,298	2.3	73.9
Yadav	135,927	1.9	75.8
Damai/Dholi	117,866	1.6	77.4
Thakuri	104,547	1.5	78.9
Limbu	89,956	1.2	80.1
Teli	87,331	1.2	81.3
Sarki	85,742	1.2	82.5
Sanyasi/Dashnami	61,990	0.9	83.4
Kathbaniyan	57,107	0.8	84.2
Koiri/Kushwaha	52,184	0.7	84.9
Chamar/Harijan/Ram	47,896	0.7	85.6
Dalit Others	40,743	0.6	86.2
Marwadi	40,727	0.6	86.8
Dhanuk	40,382	0.6	87.3
Musahar	40,127	0.6	87.9
Kalwar	39,004	0.5	88.4
Brahman - Tarai	37,073	0.5	88.9
Kurmi	36,099	0.5	89.4
Kumal	35,342	0.5	89.9
Haluwai	34,717	0.5	90.4
Others	689,641	9.6	100
Total	**7,199,514**	**100**	

Note: Ten caste/ethnic groups with the smallest population sizes include Topkegola (57), Nachhiring (59), Kusunda (64), Lhopa (65), Walung (99), Raute (115), Nurang (137), Mewahang Bala (153), Lhomi (156) and Kamar (173).
Source: CBS, 2014.

There are some differences in caste/ethnic distribution between the 2011 and 2001 census. In 2001 Newar was the second largest group and Chhetree the third. This position is juxtaposed in 2011. Likewise, Magar, Musalman and Tharu were the fourth, fifth and sixth ranking groups. But in 2011 Tharu, Magar and Tamang are the corresponding rankings. Tamang ranked seventh in 2001 but its share as well as ranking has improved in 2011. Kami, with 2%, ranked 10th in 2001, but rose to to 7th position with a 3.7% share in 2011.

4.6.6 Urban population densities

4.6.6.1 Current urban densities and decennial change in general

Population density is one of the criteria for urbanisation in many countries and it has been discussed in section 1 of this chapter. In Nepal this criterion has not obtained priority or even a meaningful recognition when designating urban areas. Generally, urban areas are expected to have larger population concentration within a specific (limited) area and a contiguity of houses and/or settlements. This is not true in the case of the majority of urban areas in Nepal and the densely settled areas appear as islands in the sea of scattered houses or settlement hamlets. The total area of the 130 municipalities is 10,394 km^2. This constitutes 7.1% of the country's territory. Between 2001 and 2014 there has been more than a threefold increase in the total area of urban territory. In 2001 the total area coverage of the then 58 municipalities was 3,276 km^2 only. Urban population density in Nepal is 693 persons per km^2. Regional variations are obvious (Table 4.30). Kathmandu valley urban areas have as high as more than 14,700 persons per km^2 (5 municipalities only), while Mountain region has only 217 persons. It is interesting to note that the densities of urban areas in Mountain are far lower than the density of rural Tarai (283 persons per km^2 area). Urban density in the hill region is not only higher than the national average but also the highest among the three ecological regions. However, this higher density is largely contributed by the concentration of the population in the Kathmandu valley. When Kathmandu valley is excluded, the population density of urban areas in the hill is far lower than the national average urban density (i.e.,426 persons per km^2). Unlike the overall population density situation in the country where Tarai ranks highest, in the case of urban population density it is superseded by Hill and ranked second in 2011.

Table 4.30: Urban population density, 2011 and 2001

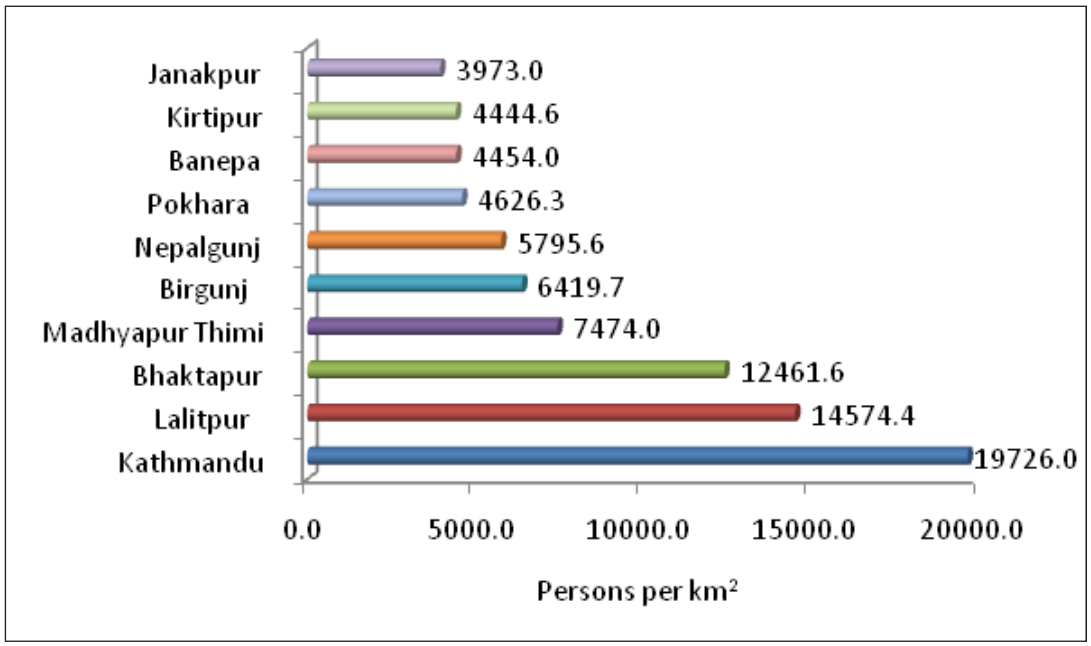
Regions	2011			2001			Change in density (%)
	Urban area (km^2)	Population	Density (person/ km^2)	Urban area (km^2)	Population	Density (person/ km^2)	
Mountain	777.0	168,388	216.7	156	43,705	280.0	-22.6
Hill (all)	4,144.7	3,152,662	760.7	1,598	1716277	479.9	58.5
Kathmandu valley (KV)	97.0	1,426,641	14,703.1	97	995,966	10,262.4	43.3
Hill (excl. KV)	4,047.7	1,726,021	426.4	1,501	720,311	479.9	-11.1
Tarai	5,472.3	3,878,464	708.7	1,522	1,467,897	961.3	-26.3
Nepal	10,394.0	7,199,514	692.7	3,276	3,227,879	985.3	-29.7

Note: The area for newly designated municipalities is calculated from information made available for the VDCs incorporated in the respective municipalities by the Survey Department, the Ministry of Land Reform and Management. Population figures are calculated from respective censuses.

Given the increase in the number of urban areas, a comparison of the urban density situation over the two census periods would not be useful. The scenario that these data present is opposite from what is usually expected. At the national level, despite a significant increase in population and area, the urban density decreased from 985 persons per km^2 in 2001 to 693 persons per km^2 in 2011. This is a decrease of almost 30%. More specifically, Tarai, Mountain and Hill, excluding Kathmandu valley, showed a decrease in 2011. On the contrary, Kathmandu valley and the hill in general showed an increase but again this increase in the hill urban density is primarily due to the increase in the density of Kathmandu valley municipalities.

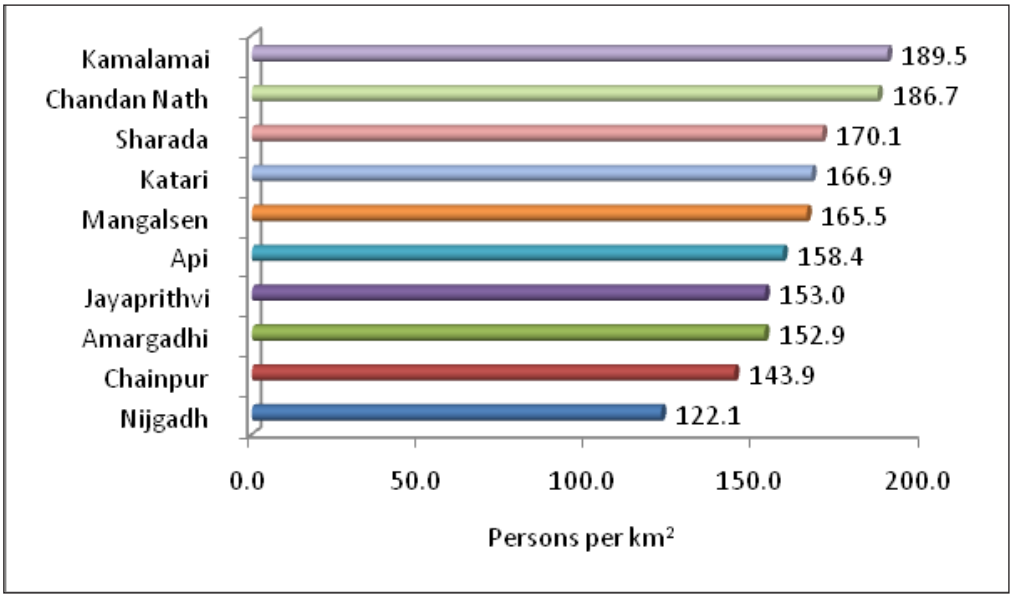
Figure 4.2 shows the top ten municipalities with respect to their population density in sequential order. Obviously as a capital city, Kathmandu ranks highest followed by three other valley municipalities. All Kathmandu valley municipalities are in the top 10 high-density municipalities. Birgunj is the only municipality outside Kathmandu that is listed in the top five. Three Tarai municipalities, namely Birgunj, Nepalgunj and Janakpur rank within the top 10 and those from the hills outside the Kathmandu valley in the top 10 include Pokhara and Banepa.

Figure 4.2: Top ten municipalities with highest population density, 2011.



No definite pattern of high or low urban densities is visible by regions except in the mountains, where almost all municipalities have lower densities. In other regions, the high and low-density municipalities are distributed almost randomly. Figure 4.3 shows the ten municipalities with the lowest population density. Of all 130 municipalities, Nijgadh has the lowest density with only 122 persons per km^2 but a large part of this municipality is covered by forest. Chainpur ranks second from the bottom and Amargadhi, third. Of the 10 municipalities with the least density, four namely, Chainpur, Jayaprithvi, Api and Chandan Nath are from the mountain region. Among those remaining, Amargadhi, Mangalsan, Katari, Sharada and Kamalamai are from the hill region and Nijgadh is the only municipality from the Tarai.

Figure 4.3: Ten municipalities with least population density, 2011.



Among the top10 municipalities with the lowest density four, Amargadhi, Jayaprithvi, Api and Mangalsen, are from the far-west and two, Chandan Nath and Sharada, are from the mid-west. Nijgadh and Kamalamai are from the central region and Katari and Chainpur are from the eastern region. This distribution also fits with the general observation that municipalities in the mid and far-west have lower population densities than municipalities in other regions.

4.6.6.2 Urban densities and change among municipalities common to 2001 and 2011 censuses

While a comparison of urban densities between the 2001 and 2011 census including all newly added municipalities shows a different pattern of change, the comparison of municipalities common to both censuses (58 municipalities) shows a positive change. Table 4.31 shows urban area, population, and density of 58 municipalities for 2001 and 2011 by region. It also shows the change in density over the two censuses in the respective region. Overall, urban density shows an increase from 985 persons per km^2 to 1282 persons per km^2 i.e., an addition of nearly 300 persons per one km^2. This is an increase of 30%.

Table 4.31: Decennial changes in urban population density among municipalities common to 2001 and 2011 censuses

Regions	2011			2001			Change in density (%)
	Urban area (km^2)	Population	Density (person/ km^2)	Urban area (km^2)	Population	Density (person/ km^2)	
Mountain	156	48,838	312.9	156	43,705	280.0	11.8
Hill (excl. KV)	1,735	1,053,904	607.4	1,598	1716277	479.9	26.6
Kathmandu valley (KV)	97	1,426,641	14703.1	97	995,966	10,262.4	43.3
Tarai	1,530	1,981,861	1295.3	1,522	1,467,897	961.3	34.7
Nepal	3518	4,511,244	1282.2	3,276	3,227,879	985.3	30.1

Note: Since seven VDCs were added in three municipalities namely Dharan, Hetauda and Birendranagar, the total area differs in 2011.
Source: Based on Population and Housing Census, 2011 and 2001.

Regional variations are apparent despite all regions demonstrating an increase in density in 2011 compared to 2001. Kathmandu records the highest change or increase where there has been an increase of 4,441 persons per km^2. Tarai region records an increase of 35%, an addition of 334 persons. The hill region shows a moderate increase of 27%. Moreover, the mountain region records the lowest increase of 12% . This means there has been only been an addition of 33 persons per km^2 in this region since 2001. This low density is a reflection of an induced tendency of declaring areas urban by merging the populations of VDCs to meet the minimum threshold to be designated as a municipality and is a political trend of declaring areas urban.

4.6.6.3 Relative ranking status of municipalities

Table 4.32 presents the ranking of 130 municipalities by population size, area and density of population. Population size and area do not correspond. The top ranking municipalities in population size do not rank high in area coverage. Kathmandu, which ranks highest in population size and density, ranks 88th in terms of area coverage. Likewise, Triyuga ranks highest in area, but ranks 23rd in population and 118th in density. Pokhara, which ranks second in population size, ranks 7th in density and 84th in its area coverage. Lalitpur, the third largest municipality in population size in the country and the second largest in the Kathmandu valley ranks 121st in area but ranks 2nd in density. Nijgadh, the second ranking municipality in area ranks 66th in population size and 130th in density.

Table 4.32: Ranking of Municipalities by population, Area and density, 2011

Municipality	Rank order in (out of 130)			Municipality	Rank order in (out of 130)		
	Population size	Area	Density		Population size	Area	Density
Kathmandu	001	088	001	Tikapur	034	068	040
Pokhara	002	084	007	Gulariya	035	039	063
Lalitpur	003	121	002	Gaidakot	036	035	069
Biratnagar	004	081	011	Belouri	037	022	085
Bharatpur	005	013	037	Rajapur	038	031	079
Birgunj	006	115	005	Tulsipur	039	042	064
Hetauda	007	008	047	Shivaraj	040	007	112
Dharan	008	030	030	Pathari-Shanishchare	041	086	035
Butwal	009	064	018	Kanchanrup	042	043	073
Bhimdatta	010	010	060	Koshi-Haraicha	043	075	049
Dhangadhi	011	033	034	Khairahani	044	066	056
Janakpur	012	109	010	Ratnanagar	045	102	025
Tilottama	013	027	041	Mirchaiya	046	050	068
Birendranagar	014	018	059	Sainamaina	047	026	090
Gadhimai	015	014	070	Shani-Arjun	048	080	044
Madhyapur Thimi	016	126	004	Dhanushadham	049	045	104
Bhaktapur	017	129	003	Punarbas	050	051	072
Damak	018	060	032	Chhireshwornath	051	082	045
Itahari	019	095	016	Devdaha	052	025	094
Attariya	020	015	080	Byas	053	079	052
Nepalgunj	021	123	006	Kalaiya	054	118	014
Chandrapur	022	003	109	Harion	055	046	076
Triyuga	023	001	118	Ishworpur	056	052	077
Kirtipur	024	122	009	Shandhikharka	057	021	100
Siddharthanagar	025	100	015	Kankai	058	053	074
Ghorahi	026	055	039	Sunawal	059	028	096
Kohalpur	027	011	095	Nilkantha	060	032	093
Lamki-Chuha	028	005	106	Kamalamai	061	004	121
Lumbini Sanskritik	029	041	057	Pyuthan	062	024	099
Birtamod	030	101	019	Shukla Gandaki	063	038	088
Lekhnath	031	054	046	Rajbiraj	064	125	012
Mechinagar	032	083	033	Rampur	065	023	110
Kawasoti	033	040	061	Nijgadh	066	002	130

(Table continues...)

(Annex 4.32 continued...)

Municipality	Rank order in (out of 130)			Municipality	Rank order in (out of 130)		
	Population size	Area	Density		Population size	Area	Density
Urlabari	067	107	027	Ramgram	099	104	048
Gaur	068	114	021	Dhuhabi-Bhaluwa	100	116	028
Bardaghat	069	076	065	Malangawa	101	128	013
Panchkhal	070	047	089	Phidim	102	073	092
Sharada	071	006	123	Banepa	103	130	008
Lahan	072	117	020	Chainpur	104	009	129
Sundar-Dulari	073	092	051	Waling	105	103	055
Gorkha	074	078	071	Beltar-Basaha	106	065	097
Kushma	075	071	078	Jaleshwor	107	120	023
Gaushala	076	091	054	Dipayal Silgadhi	108	057	101
Belbari	077	061	083	Mangalsen	109	016	125
Devchuli	078	059	087	Bhimeshwor	110	074	098
Lalbandi	079	072	081	Thaha	111	049	114
Putalibazar	080	062	084	Amargadhi	112	017	128
Dullu	081	029	111	Narayan	113	069	102
Kapilvastu	082	098	042	Api	114	020	126
Shambhunath	083	037	105	Krishna Nagar	115	111	036
Baglung	084	119	022	Jayaprithvi	116	019	127
Tansen	085	113	024	Myanglung	117	036	120
Resunga	086	070	086	Taplejung	118	096	082
Rangeli	087	094	058	Chandan Nath	119	034	122
Beni	088	087	067	Ilam	120	108	053
Inaruwa	089	112	026	Sanfebagar	121	077	107
Siraha	090	110	029	Bhadrapur	122	127	017
Katari	091	012	124	Diktel	123	063	115
Panauti	092	106	038	Dasharathchanda	124	085	104
Suryodaya	093	048	103	Siddhicharan	125	058	117
Bidur	094	105	043	Bhojpur	126	067	116
Besishahar	095	093	062	Chautara	127	097	091
Chitraban	096	099	050	Bandipur	128	056	119
Dhankuta	097	090	066	Dhulikhel	129	124	031
Khandbari	098	044	108	Chapakot	130	089	113

Note: Listing of municipalities in this table is based on their population size (from largest to smallest).

The top ten municipalities with the highest and lowest population density have already been noted above. With respect to area the top ten municipalities include Triyuga, Nijgadh, Chandrapur, Kamalamai, Lamki-chuha, Sharada, Shivraj, Hetauda, Chainpur and Bhimdatta respectively. The smallest municipalities in area include Banepa, Bhaktapur, Malangawa, Bhadrapur, Madhyapur Thimi, Rajbiraj, Dhullikhel, Nepalgunj, Kirtipur and Laalitpur respectively. The top ten municipalities by the

largest population size are Kathmandu, Pokhara, Lalitpur, Biratnagar, Bharatpur, Birgunj, Hetauda, Dharan, Butwal and Bhimdatta respectively. While the ten 10 least populated municipalities include Chapakot, Dhulikhel, Bandipur, Chautara, Bhojpur, Siddhcharan, Dasharathchanda, Diktel, Bhadrapur and Sanfebagar respectively.

4.7 Urbanisation and development

The two concepts, urbanisation and development, are very closely related. A higher level of urbanisation of a country or a region normally reflects the higher level of development of that area. The process of turning villages into towns and towns into cities, accompany structural changes in the economy usually from agrarian to industry or commerce based. These changes reinforce both urbanisation and development. The following section discusses urbanisation and development with some selected measures.

4.7.1 Human poverty index (HPI) and Human Development Index (HDI)

HPI is a measure of average deprivation. Three dimensions used for its measurement are: i) a long and healthy life, ii) knowledge and iii) a decent standard of living (Nepal Human Development Report 2014). Vulnerability to death at an early age reflects a deprivation of a long and healthy life. Similarly, adult literacy rates are a measure of deprivation (or non deprivation) of knowledge. The HDR of 2014 uses the average of the two indicators, namely the percentage of children below 5 years who are malnourished and the percentage of the population without access to safe drinking water, as a measure of deprivation of a decent standard of living. Table 4.33 shows the HPI for the country and for urban and rural areas in Nepal. Nepal's HPI is 31.1. Urban areas are comparatively better off with an HPI of 18.5 while rural areas are worse off with a corresponding figure of almost 34.

Table 4.33: HPI values by urban rural areas, 2011

Indicators	Urban	Rural	Nepal
Percent of people not expected to survive to age of 40	5.32	7.94	7.52
Adult illiteracy rate	20.73	45.02	40.43
Percentage without safe water	16.36	17.27	17.09
Percentage of children under age five who are malnourished	26.70	41.48	40.50
Deprivation in economic provisioning	21.53	29.53	28.80
Human Poverty Index (HPI)	18.51	33.96	31.12

Source: Nepal Human Development Report 2014.

In all indicators relating to HPI, urban areas are better off compared to the country as a whole as well as rural areas. Of all the indicators, the rural urban gap is far higher in adult literacy rates than others. It should be noted, however, that at the time of publication of the HDR 2014 there were only 58 municipalities. As there are now 130 municipalities and the newly added ones are more rural than urban in character, the urban rural gap as demonstrated in Table 4.31 is likely to be much narrower and the values closer to rural areas.

Table 4.34 shows the Human Development Index (HDI) values for Nepal, urban areas and rural areas. While the HPI captures deprivation as a result of income and capability deprivation, the HDI reflects the expansion of opportunities and choices. The HDI value (based on geometric means) for Nepal is 0.490 for 2011. The urban rural gap in the HDI value is 0.115, which is a difference of 25%. In all indicators related to the HDI urban areas are better off than rural areas. However, with respect to life expectancy at birth the differences are marginal.

Table 4.34: HDI values by urban-rural areas, 2011

Indicators	Urban	Rural	Nepal
Life expectancy	68.93	68.81	68.80
Adult literacy	79.27	54.98	59.57
Mean years of schooling	4.94	3.69	3.90
Per capita income (PPP $)	2248	936	1160
Human Development Index (HDI)	0.579	0.464	0.490

Source: Nepal Human Development Report 2014.

4.7.2 Urban poverty

Table 4.35 shows the percentage of people living below the poverty line along with the poverty line in 2011 prices (NRs). Urban areas (58 municipalities only) are better off than rural areas in poverty incidences. At the national level 25% of people live below the poverty line with an annual income of less than NRs. 19,261. Urban areas have a poverty incidence of 15.5% and this is lower by 9.7 percentage points than the national average. The rural urban difference is high with rural areas showing a poverty incidence of 27.4%.

Table 4.35: Population below poverty

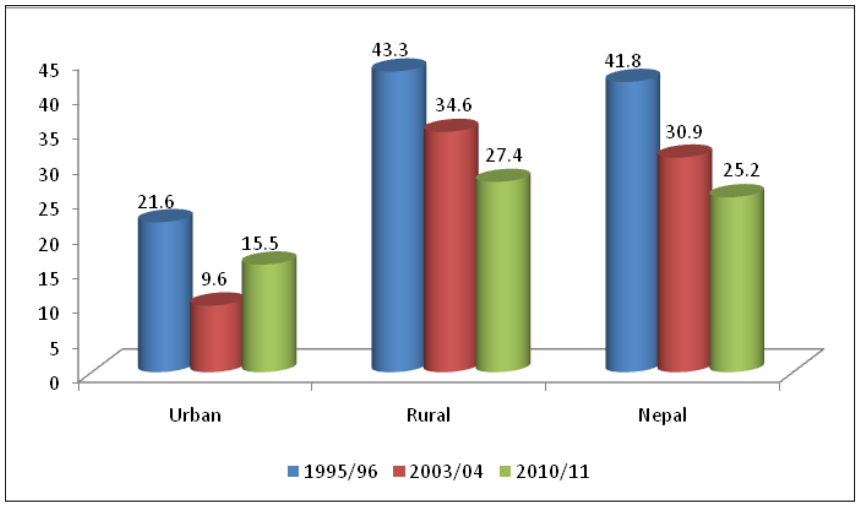
Regions	Population below poverty line (in per cent)	Poverty line in 2010/11 price (NRs)
Nepal	25.2	19,261
Rural	27.4	-
Urban	15.5	-
Urban Kathmandu	11.5	40,933
Urban hill	8.7	19,577
Urban Tarai	22.0	21,133

Source: CBS, 2011.

At the regional level data are available for urban Kathmandu, urban hill and urban Tarai. A comparison of these three regions suggests that poverty incidences are far higher in urban Tarai. Urban hill shows the lowest level of poverty incidence and Kathmandu stands in between with 11.5% of urban people living below the poverty line in 2011. It is to be noted that different poverty line vales are used by the Nepal Living Standards Survey for Hill, Kathmandu and Tarai.

Figure 4.4 presents the temporal dimension of poverty for three survey periods and is based on the Nepal Living Standards Surveys of 1995/96, 2003/04 and 2010/11. At the national level a consistent decline is evident. Poverty incidence has decreased from 42% to 25% from 1995/96 to 2010/11. This trend applies to rural areas as well. Poverty has decreased from 43% to 27%. In the case of urban areas but the trend of decline is not linear. In 1995/96, 22% of urban people were living below the poverty line in urban areas and this proportion declined significantly to 10 % in 2003/04. Currently, it stands at 15.5%, an increase of 6%. This shows that urban areas are not devoid of poverty incidences but rather a significant proportion of urban people live below the poverty line, which has shown a tendency to increase.

Figure 4.4: Changes in poverty rates



4.7.3 Urban primacy

Urban primacy may be loosely taken as the spread or concentration of development as measured through the nature of urbanisation. Normally primacy indices are calculated as two-city index and four city index. These indices show the nature of urban development, especially in respect to the tendency of a population to concentrate in one major city or a few notable cities. The increasing values of these indices suggest a tendency towards concentration whereas a decreasing tendency reflects more of a decentralised nature over the years. Table 4.36 shows primacy indices for the last four censuses. The two city index shows a consistent increase until 2001 but has slightly decreased in 2011. This means the tendency for population concentration in Kathmandu continues. A decrease in 2011 suggests a tendency of the increasing attraction of other cities but as Sharma (2003) noted, in a functional sense Kathmandu and Lalitpur are already one unit and thus the two city index will be far higher.

Table 4.36: Urban primacy indices, 1981-2011

Indices	Census year			
	1981	1991	2001	2011
Two city index	2.51	3.26	4.03	3.82
Four city index	1.06	1.24	1.38	1.44
Share of 10 largest urban areas (%)	73.5	66.6	52.2	33.7

Note: For comparison with earlier censuses see, Sharma, 2003.

The four city index shows a tendency of increase. This index value increased from 1.06 in 1981 to 1.44 in 2011. A consistent decrease in the share of the 10 largest municipalities is apparent. Many new municipalities have been added in between census years and this decrease is largely attributed to the addition of urban population through reclassification.

Table 4.37 presents a regional dimension of primacy indices by development regions. Because of the large population size of Kathmandu, central region shows the highest values in both the indices. Western region with Pokhara comes next. Overall, central and western regions show more of a concentration of urban population in one urban area than the other regions. Population sizes of municipalities in central region are very uneven. The ratio of largest to smallest municipalities is more than 68 and no other region has such a high difference. This ratio is low in the municipalities of mid-western and far-western regions suggesting relatively even sizes of urban areas there.

Table 4.37: Urban primacy by development regions, 2011

Development Regions	Two-city index	Four-city index	Ratio of largest to smallest urban area	Four main urban areas
Eastern	1.51	0.71	12.5	Biratnagar, Dharan, Damak, Itahari
Central	4.42	1.95	68.3	Kathmandu, Lalitpur, Bharatpur, Birgunj
Western	2.16	0.93	20.0	Pokhara, Butwal, Tilottama, Siddharthanagar
Mid-western	1.17	0.43	4.5	Birendranagar, Nepalgunj, Ghorahi, Kohalpur
Far-western	1.03	0.44	6.2	Bhimdutta, Dhangadhi, Attariya, Lamki-Chuha
Nepal	3.82	1.44	76.5	Kathmandu, Pokhara, Lalitpur, Biratnagar

Source: Authors calculation.

The distribution of four cities in the respective regions shows a tendency of clustering or something that follows an axis and forms a corridor. Eastern region is a critical example where all four major cities are not only closely located but they also form a corridor. In future some of them are likely to develop into a conurbation e.g. Biratnagar-Itahari–Dharan. In the central region Kathmandu and Lalitpur are hardly separate entities in a functional sense and four cities Birgunj, Bharatpur, Kathmandu and Lalitpur form an axis. The western region shows almost a similar situation as the eastern region. Butwal, Tilottama and Siddharthanagar already appear as a cluster and with Pokhara they form a corridor. Three of the

four main urban centres of mid-western region are neatly tied in through the north-south highway. Ghorahi is also not too far away from the rest of the major cities there. More importantly, major cities in the far-west are closely located forming a cluster.

4.7.4 Basic facilities and urbanisation

4.7.4.1 Household facilities

Having various kinds of household facilities are indicative of development and urban areas are expected to have more such facilities than rural areas. Table 4.38 shows data on urban households by available facilities at the household. Twelve facilities are listed and only 6% of households are reported to be without any of these facilities. Almost 93% of households have at least one of these facilities. Of all the household facilities, having a mobile phone is most common and 80% of households have this facility. Television is more common than radio and more households have a television than a radio currently. Approximately 43% of households have cable television. With respect to vehicles for mobility, bicycles are the most common and 36% of households reported having this facility. This is more common in the municipalities of Tarai.

Table 4.38: Distribution of urban households by household facilities

Available Facilities	Number of households	Per cent	Available Facilities	Number of households	Percent
At least one facility	1,521,482	92.6	Refrigerator	287,779	17.5
Mobile phone	1,313,238	80.0	Telephone	275,604	16.8
Television	901,376	54.9	Internet	138,139	8.4
Radio	860,044	52.4	Motor car	49,813	3.0
Cable television	695,403	42.3	Other vehicle	12,116	0.7
Bicycle	590,559	36.0	Without any facility	99324	6.0
Motor cycle	301,552	18.4	Not stated	21,391	1.3
Computer	280,903	17.1	Total households	1,642,197	NA

Source: CBS, 2014.

Nearly one-fifth of households have a motor cycle and 3% of households have a car. Similarly, 17% of households have computer facilities, while 8% of households have Internet facilities. About 18% of urban households have a refrigerator and 17% of households have a telephone (land line). Overall, this distribution of urban households by household facilities should be interpreted in isolation. Given the overwhelming dominance of rural households in the country, this proportional distribution may not be considered low but in the context of urbanised areas elsewhere this proportional coverage is far lower.

4.7.4.2 Drinking water and sanitary situation

Sources of drinking water

Table 4.39 shows the distribution of households by main source of drinking water. The main source of drinking water for the majority of households is tap/piped water. About 53% of households' major source is tap/piped water. Tube well and hand pumps are also used by nearly one-third of urban households. This is also the case in Tarai municipalities. Kuwa (well), both covered and uncovered, as a source of drinking water is reported by 6% of households. Spout water is the main source for 3% of households. In general, with respect to safe drinking water, the urban drinking water situation is far from satisfactory. A large proportion of households use tubewell or kuwa (well) as drinking water and its safety or purity is unknown.

Table 4.39: Main source of drinking water

Main sources	No. of households	Percent
Tap/piped	867,617	52.8
Tubewell/hand pump	528,651	32.2
Spout water	53,188	3.2
Covered well/kuwa	48,960	3.0
Uncovered well/kuwa	45,459	2.8
River / stream	5,046	0.3
Others	82,277	5.0
Not reported	10,999	0.7
Total	**1,642,197**	**100**

Source: CBS 2014.

Availability of toilet facilities

Toilet facilities in a household are one of the indicators of a health sanitary situation and it is a must for all urban households. Nepal's municipalities are poor in their household coverage of toilet facilities and the sanitary situation again is far from satisfactory. The Population and Housing Census of 2011 reported three types of toilet facilities in households. These include a flush toilet, ordinary toilet and no toilet. Overall, 66% of urban households have a flush toilet, 16 % have an ordinary toilet, 17% have no toilet and about 1% were recorded as not reported. Table 4.40 shows the distribution of households without toilet facilities in detail. Of the 130 municipalities more than 60% of households do not have toilet facilities in 14 municipalities. Among them Shambhunath, Gausala, Dhanushadham, Lumbini Sanskritik and Ishworpur respectively have the lowest percentage, where more than 70% of households in these municipalities do not have toilet facilities at their household. Mirchaiya, Rangeli, Dullu, Shivraj, Kanchanrup and Chhireswornath are also among the municipalities where more than 65% of households do not have toilet facilities. The number of municipalities where more than 50% of households do not have toilet facilities is 21 (16%). Most of these municipalities are from Tarai and are the newly added municipalities.

Table 4.40. Distribution of urban areas by percent of households without toilet facilities

Percentage of households having no toilet	No. of municipalities	Percent
More than 60	14	10.8
50-60	7	5.4
40-50	12	9.2
30 - 40	14	10.8
20 - 30	14	10.8
10 - 20	29	22.3
5-10	20	15.4
Less than 5	20	15.4
Total	**130**	**100**

Source: CBS, 2014.

In 12 municipalities 40% to 50% of households do not have toilet facilities. Among them, with the exception of Sanfebagar and Dipayal-Silgadi, all municipalities are from the Tarai, including Harion, Gaur, Nijgadh, Lalbandi and Gadimai. It is only in 69 municipalities (less than 50%) where only less than 20% of households do not have toilet facilities. In other words, more than 80% of households there have toilet facilities. Importantly, Lalitpur, Kathmandu, Bhaktapur, Pokhara, Kirtipur, Lekhnath, Madhyapur-Thimi, and Bharatpur, are 8 municipalities where households without toilet facilities are less than 1%.

A flush toilet is another indication of sanitary situation. In recent years it has become symbolic with socio-economic status and household wellbeing in urban areas. Table 4.41 shows the distribution of municipalities by percentage of households with flush toilet facilities. On average, 66% of urban households have flush toilets but household distribution with flush toilet facilities is uneven. Only 10% of municipalities have more than 80% of households with flush toilets. Almost one-third of municipalities have less than 30% of households with flush toilets.

Table 4.41: Distribution of urban areas by percentage of households having flush toilet

Percentage of households with flush toilet	No. of municipalities	Percent
More than 80	13	10
70-80	24	18.5
60-70	15	11.5
50 - 60	19	14.6
40- 50	17	13.1
30-40	24	18.5
20 - 30	9	6.9
Less than 20	9	6.9
Total	**130**	**100**

Source: CBS, 2014.

4.7.5 Sources of lighting

Four major sources of lighting in urban households are electricity, kerosene, biogas and solar. Electricity is the main source of lighting reported by almost 90% of households. Kerosene was reported as a main source of lighting by 7.4% of households. Biogas and solar were also reported as a main source of lighting by some households but the proportion of households was very minimal, 0.3% and 0.8% respectively.

Electricity is the main source of lighting in urban households. However, two interesting observations are noted in the census data. No municipalities had 100% of households using electricity as their main source of lighting. Second, in Dullu municipality (Dailekh) the proportion of households reporting electricity as the main source of lighting was only 4.2%, while about 41% of households there reported solar as their main source of lighting (the highest of all municipalities). Table 4.42 shows the distribution of municipalities by households using electricity as the main source of lighting. Of all the municipalities Bhaktapur ranks highest with an electricity coverage of 98.6%. Except in Kirtipur, the rest of the four municipalities in Kathmandu valley have more than 98% of households using electricity as their main source of lighting in 2011. All the top 10 municipalities in respect to electricity coverage are from the existing 58 municipalities or, in other words, the older municipalities. Among the new municipalities more than 96% of households have electricity as the main energy source for lighting in Chitraban, Besisahar, Khairahani and Chautara.

Table 4.42: Urban households using electricity as usual source of lighting

Percentage of households using electricity as usual source of lighting	No. of municipalities	Percent
More than 95	28	21.5
90-95	35	26.9
80-90	32	24.6
70 - 80	14	10.8
60-70	8	6.2
50 - 60	8	6.2
Less than 50%	5	3.8
Total	**130**	**100**

Source: CBS, 2014.

Many municipalities show a typical rural character with their poor electricity coverage in respect of lighting facilities. There are municipalities such as Taplejung (39.9%), Mangalsen (40.4%), Shambhunath (42.2%) and Sanphebagar (48.3%) where less than 50% of households are using electricity as the main source of lighting, in addition to Dullu where it is only 4.2%. Overall a larger proportion of municipalities had 90% to 95% of households using electricity as their main source of energy for lighting.

The use of kerosene as usual source of lighting is a characteristic of rural households in Nepal. However, a sizeable proportion of urban households reported using kerosene as a usual source of lighting. On average Kerosene was reported as the usual source by 7% of households in urban areas but there are many municipalities where more than 30% of households use kerosene as the usual source of lighting. Table 4.43 shows the distribution of municipalities by the percentage of households using kerosene as the usual source of lighting. The rural character of urban places is observed in many municipalities.

Table 4.43: Urban households using kerosene as usual source of lighting

Per cent of households using kerosene as usual source of lighting	No of municipalities	Percent
More than 30	12	9.2
20 - 30	9	6.9
15-20	7	5.4
10-15	30	23.1
7.5 – 10	9	6.9
5 – 7.5	20	15.4
Less than 5	43	33.1
Total	**130**	**100**

Source: CBS, 2014.

As of 2011 more than 15% of urban households used kerosene as the usual source of lighting in 28 out of 130 municipalities. Likewise, in 23% of municipalities, the proportion of households using kerosene as usual source of lighting ranges from 10% to 15%. It is only in one-third of municipalities where less than 5% of households use kerosene as usual source of lighting.

4.7.6 Usual type of fuel for cooking

Table 4.44 shows the distribution of households by usual type of fuel used for cooking. LP gas and firewood are the two main sources of fuel used for cooking in urban areas. By 2014, slightly more than 50% of households were using LP gas for cooking. Wood or firewood still continues to be one of the two main sources and 41% of households still use this as the main source of cooking. Biogas is the source for 3% of households while cow dung is still used by an equal percentage of households.

Table 4.44: Households by usual type of fuel used for cooking

Usual type of fuel	No. of households	Percent
LP gas	827,604	50.4
Wood / firewood	677,849	41.3
Bio gas	48,474	3.0
Cow dung	43,144	2.6
Kerosene	25,738	1.6
Electricity	1,720	0.1
Others	6,315	0.4
Not reported	11,353	0.7
Total	**1,642,197**	**100**

Source: CBS 2014.

Between 2001 and 2011 some notable changes in the use of fuel for cooking have taken place. In 2001 there was no mention of LP gas as a fuel for cooking, while it is ranks first in fuel used in 2011. Similarly kerosene was used by 36% of households in 2001 but there is no mention of kerosene as a fuel

for cooking in 2011, however, 7% of households are using it for lighting. Biogas, was not reported in the 2001 census but is used by 3% of households for cooking. Cow dung, not noted in 2001, is used by about 3% of households in 2011. Some changes have taken place in the pattern of fuel used for cooking but how much of this change is attributed to the newly designated municipal situation and how much is change within existing ones (i.e. older municipalities) is yet to be analysed.

4.8. Conclusion: The future of Nepalese urbanization

Nepal's urbanisation level is low by all standards but its growth has been quite rapid in recent years. Currently, only 13 out of 75 districts do not have urban areas, against 33 districts without urban areas in 2001. There has been a recent increase in the number of municipalities. Among 130 municipalities, the majority have between 20,000 and 50,000 people. Regional dimensions are evident, with Kathmandu valley and Tarai being more urbanised than other regions by national standards. Population growth rates are higher for moderate sized municipalities than smaller ones or those over 100,000 populations. Much of this growth is contributed by the designation of new municipalities between the census years. This is one of the reasons that despite the prevalence of urban primacy, the growth rates of municipalities above 100,000 populations are not among the highest. There have been changes in the rankings of urban places over the years but Kathmandu as a capital city continues to dominate. None appear to challenge its dominance in the immediate future.

Demographically, the urban population is mature and the dependency ratio is low. The proportion of both children and elderly are small by national and rural standards. To date literacy and educational attainments are not up to the required standard. Thirty per cent of females and 15% of males are illiterate in urban areas. The gender gap prevails, although it is not as high as in rural areas. This is despite continuous improvement in literacy rates and educational attainment over the decades. Urban areas represent 124 out of 125 caste/ethic groups reported by the census of 2011 of the country.

The urban population structure is in a stage of reaping the rewards of the demographic dividend. Urban areas need to demonstrate their characteristics as centres of opportunity but as of 2014, most cities in Nepal are primarily designated areal units with sizeable populations and municipal administrations. The usual expectation of urbanism demonstrated by household coverage of basic services and developmental infrastructure, educational superiority and many other urban attributes are not superior to many rural areas in the country. Only a limited number of municipalities, probably less than 40 out of 130, demonstrate urban qualities, the others may be called urban centres without urban facilities. Contrary to the general expectation of an increase in urban density over the years, at the regional level all ecological and development regions, except Kathmandu valley, recorded a decrease in urban density in the 2011 census compared to 2001. Nonetheless, when municipalities common to both theses censuses only are taken into consideration, all regions show an increase in density.

Urban areas are comparatively better off with an HPI of 18.5 while rural areas are worse off with a corresponding figure of almost 34. Likewise the HDI value of 0.579 (for 58 municipalities) against the national average of 0.490 shows urban areas as better off but with the designation of new municipalities, these values are likely to be lower, although the index is still likely to remain higher than the national average. Urban poverty is an issue and 15% of the urban population live below the poverty line as of 2011. This value is likely to get higher with the newly added rural-like municipalities. Urban primacy continues and clustering tendencies of major municipal areas are evident in almost all development regions. Safe water supply and the sanitary situation are not satisfactory as yet. Tap/piped water is the

main drinking water source for 53% of households only. A large proportion of households lack toilet facilities. LP gas is the main fuel for cooking but the proportion of households using firewood is still considerable. In more than 10% of municipalities, kerosene is the main source of lighting for more than 30% of households.

Several contextual scenarios suggest a likely increase in urbanisation. First, rural urban migration is increasing. In the 2011 census, of the four migration streams the share of rural to urban migration was 33.4% compared to 25.5 % in 2001. Second, nearly 2 million people are recorded as absentee abroad and when they return there is a tendency of the returnee moving to areas with better facilities, probably in urban areas, if not the capital city. Third, the Nepal Living Standards Survey 2010/11 reported 56% of households receiving remittance and over time the tendency to invest in urban areas is increasing. Fourth, an occupational shift among new generations towards non-agricultural activities is evident. All these scenarios directly and indirectly help create a conducive situation for further growth of urban areas and urbanisation. Again, the government tendency of designating more and more urban areas fairly frequently further reinforces the likely increase in urbanisation.

A projection based on the Population Perspective Plan 2002-2027 stated that 32% of the country's population would be living in urban areas by 2027 (MoHP/UNFPA 2005). In the mean time and in absolute terms the increase in the level of urbanisation from 14% in 2001 to 27% in 2011 is not only a positive development but also a significant achievement for the country. However, this achievement must be interpreted in the context of what kind of urban characters these newly designated urban centres have added in the total urbanisation scenario of the country and how they compare internationally. Having more urban areas may be considered important but more important questions to consider before advocating for more and more municipalities are whether: i) existing municipalities have adequate urban facilities, ii) the criteria adapted for the designation of a municipality are appropriate or functional, iii) there are institutional mechanisms to deliver social provisions efficiently to urban households, and iv) environmental conditions are conducive for future population and infrastructural expansion and/or service delivery provision.

Nepal's recent increase in urbanisation level appears to be consciously guided by bringing its urbanisation level on a par with its neighbouring SAARC countries and by a vision of raising the nation's overall development status from one of the least developed countries to one of the developing ones by the year 2022 as noted in the concept paper of Thirteenth Plan, 2013/14 -2015/16 (NPC, 2013). Practically, at present the population size appears to be the prime criteria for designating urban areas although it is said that more than a dozen criteria were discussed before designation. This criterion at present only increases the number of municipalities, with a corresponding increase of the urban population in size. Therefore, there is a need to come up with a more functional and economic criteria so that urban areas reflect urbanism, a missing dimension in urban designation in Nepal. On the whole, in all likelihood urban areas in Nepal are likely to increase. For various social and economic reasons, most people see their future in urban areas and correspondingly urban areas in general hold their future.

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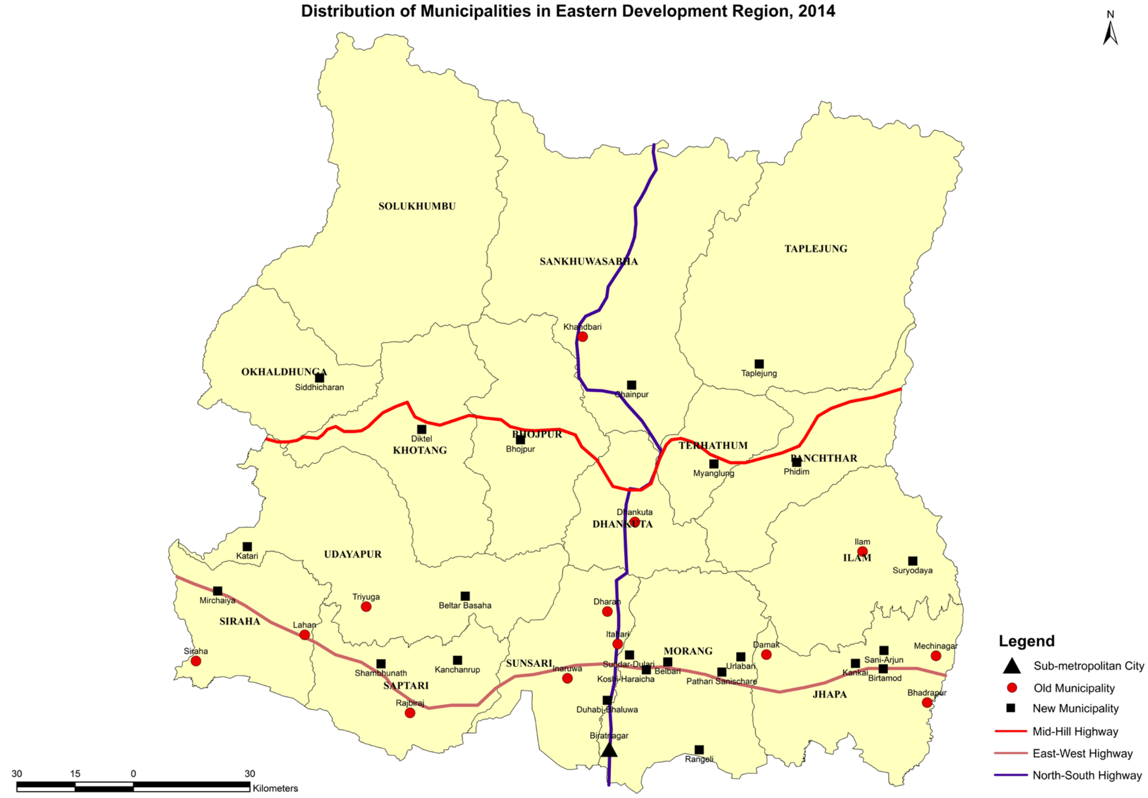
Annex 1

Map: 2

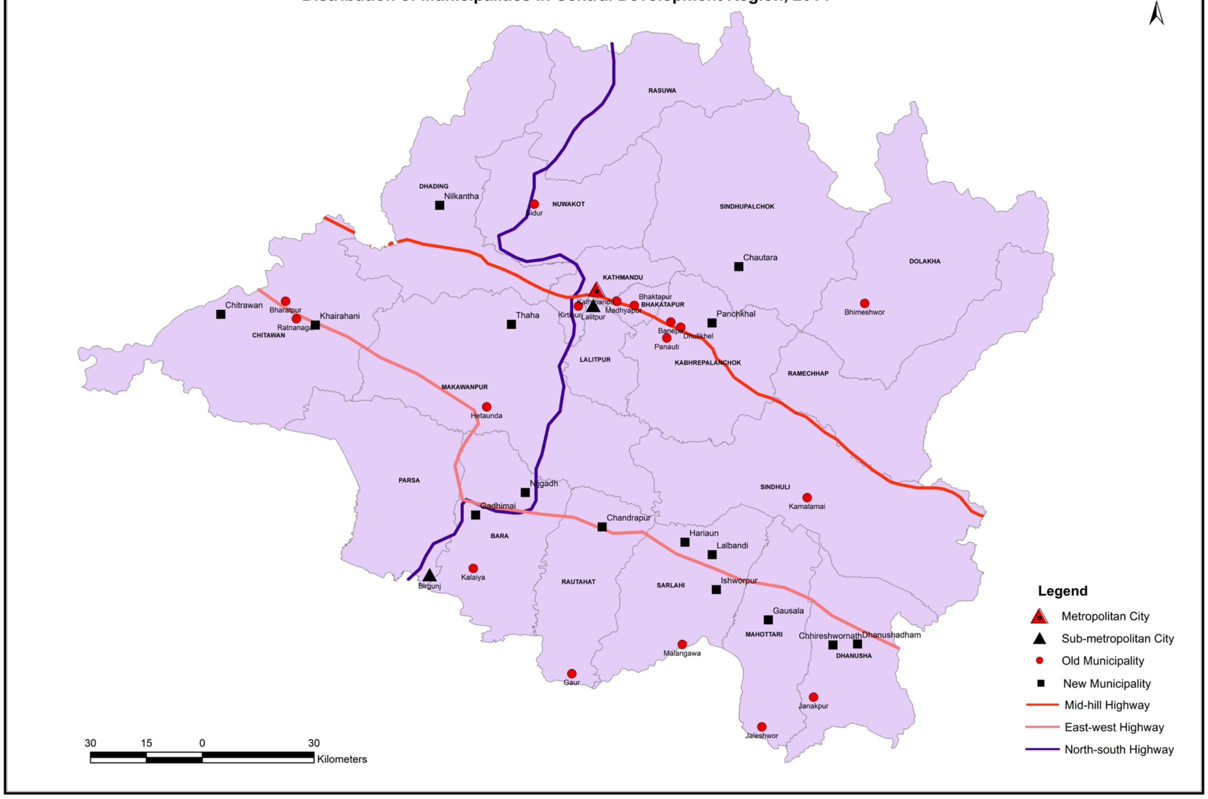
Distribution of Municipalities in Eastern Development Region, 2014



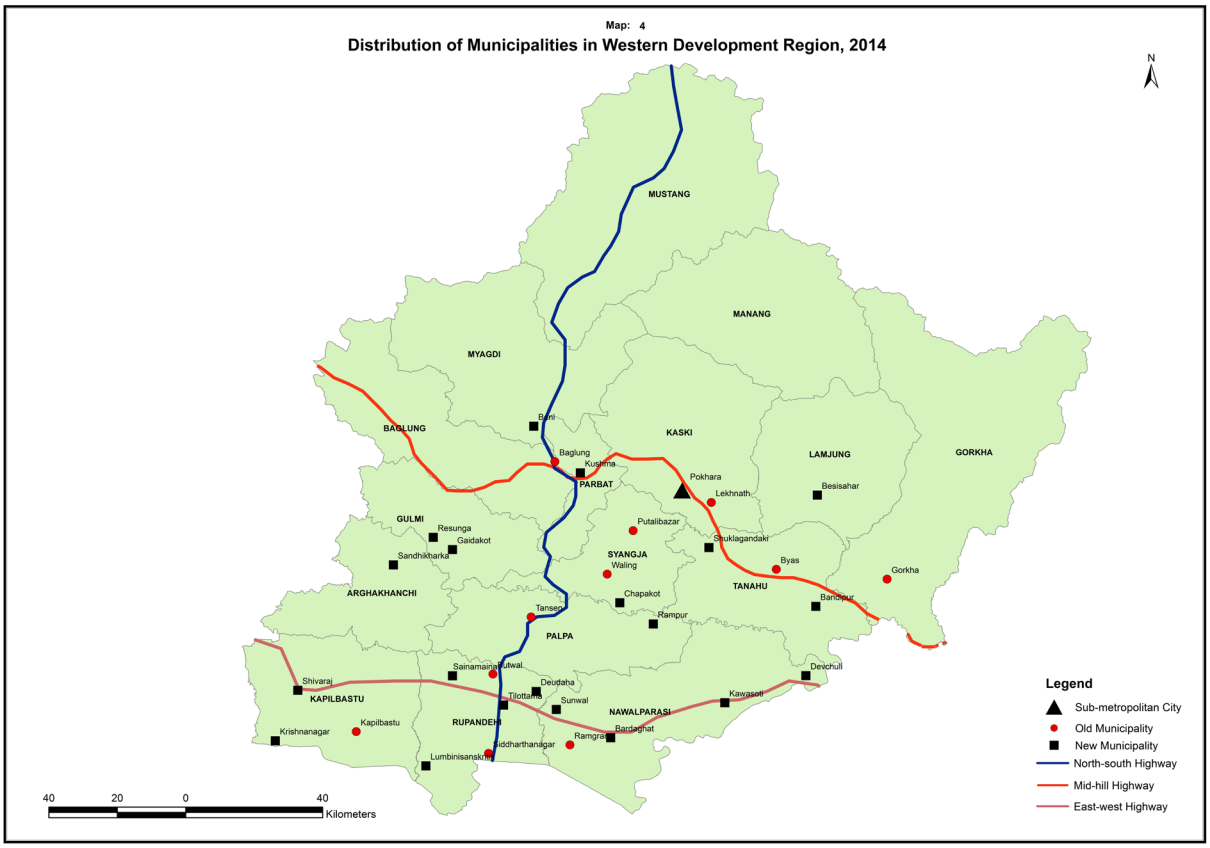
Annex 2

Map: 3

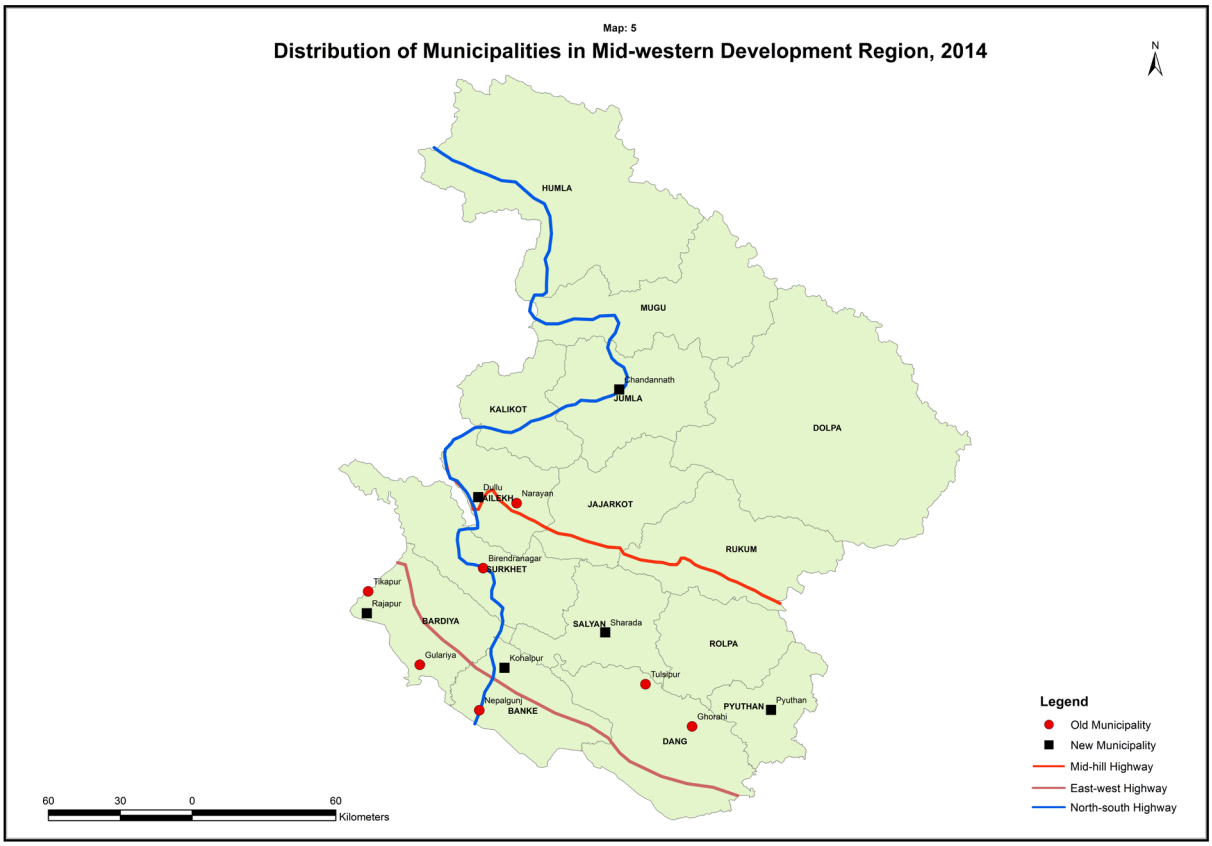
Distribution of Municipalities in Central Development Region, 2014



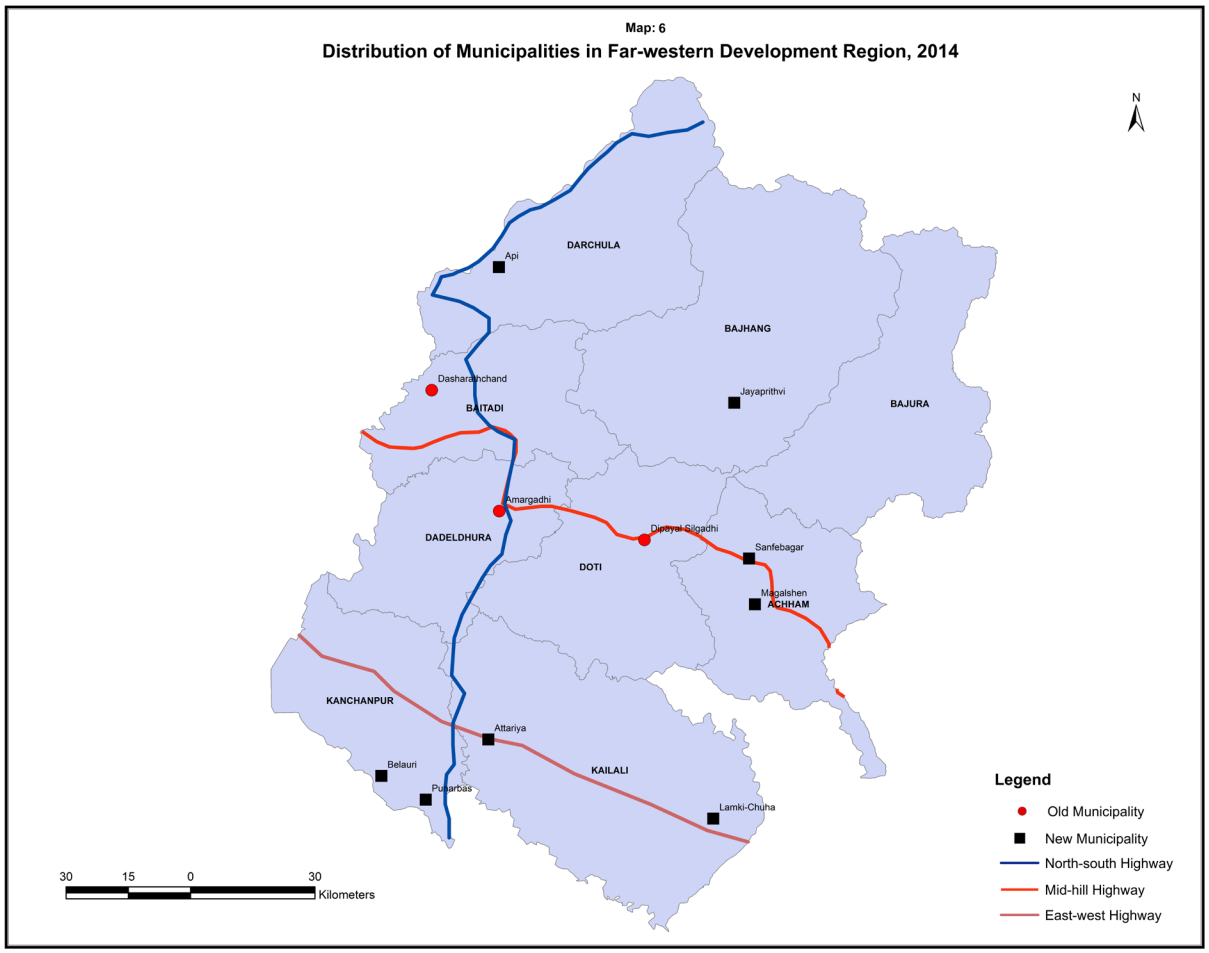
Annex 3


Map: 4
Distribution of Municipalities in Western Development Region, 2014
N
MUSTANG
MANANG
MYAGDI
BAGLUNG
Beni
KASKI
Baglung
Kushma
PARBAT
Pokhara
Lekhnath
LAMJUNG
Besisahar
GORKHA
GULMI
Resunga
Gaidakot
Sandhikharka
Putalibazar
Shuklagandaki
SYANGJA
Waling
Byas
Gorkha
TANAHU
Bandipur
ARGHAKHANCHI
Chapakot
Tansen
Rampur
PALPA
Sainamaina
Butwal
Devchuli
Shivaraj
Deudaha
KAPILBASTU
Tilottama
Sunwal
Kawasoti
NAWALPARASI
Kapilbastu
Krishnanagar
RUPANDEHI
Bardaghat
Ramgram
Siddharthanagar
Lumbinisanskriti
40 20 0 40
Kilometers
Legend
Sub-metropolitan City
Old Municipality
New Municipality
North-south Highway
Mid-hill Highway
East-west Highway

Annex 4


Map: 5
Distribution of Municipalities in Mid-western Development Region, 2014
N
HUMLA
MUGU
Chandannath
JUMLA
KALIKOT
DOLPA
Dullu
KAILEKH
Narayan
JAJARKOT
RUKUM
Birendranagar
SURKHET
Tikapur
Rajapur
BARDIYA
SALYAN
Sharada
ROLPA
Gulariya
Kohalpur
Tulsipur
Nepalgunj
BANKE
PYUTHAN
Pyuthan
Ghorahi
DANG
60 30 0 60
Kilometers
Legend
Old Municipality
New Municipality
Mid-hill Highway
East-west Highway
North-south Highway

Annex 4.5


Map: 6
Distribution of Municipalities in Far-western Development Region, 2014
N
DARCHULA
Api
BAJHANG
Dasharathchand
BAITADI
Jayaprithvi
BAJURA
Amargadhi
DADELDHURA
Dipayal Silgadhi
Sanfebagar
DOTI
Magalshen
ACHHAM
KANCHANPUR
Attariya
Belauri
KAILALI
Punarbas
Lamki-Chuha
30 15 0 30
Kilometers
Legend
Old Municipality
New Municipality
North-south Highway
Mid-hill Highway
East-west Highway

CHAPTER 5

HUMAN POPULATION AND ENVIRONMENTAL PROBLEMS IN NEPAL

Kedar Rijal, PhD*

Ramesh Prasad Sapkota**

Abstract

Nepal is characterised by diverse physiographical and ecological features. Nepal's population has been increasing over the decades. This trend of population growth is linked with different aspects of emerging environmental issues and concerns. It has been noted in many circumstances that human population size, affluence of the country and environmental consequences are interrelated. Although the connections are innumerable, the nexus between population growth and the environment has generated different environmental problems such as solid waste management, water pollution, air pollution and different forms of natural disasters in Nepal. Similarly, climate change is also affecting the growth and development of the nation. The inexorable pattern and direction of the change has nationwide adverse effects on key economic sectors. In this context, environmental quality should be improved by more awareness of the environment and addressing the reciprocate momentum created by population growth on the environment. Close harmony between urbanisation and environmental quality is essential for overall sustainable development of the nation.

5.1. Introduction

5.1.1 Background

Nepal, with an area of 147,181 km^2 is characterised by diverse physiographical and ecological features within a span of about 200 km distance from south to north, and 885 km distance from east to west. Within this short span, the elevation ranges from around 70m in the south to 8,848m in the north. On the basis of climatic zones, the country can be divided into tropical zone, sub-tropical zone, temperate zone, sub-alpine zone and alpine zone. Similarly, in relation to physiographic landscapes, extending from north to south, the Himalayan country can be divided into Higher Himalaya, High Mountains, Middle Mountains, Siwalik and Tarai region (Table 5.1).

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Table 5.1: Major physiographic landscapes of Nepal

Landscapes	Altitude (masl)	Surface area (%)	Features
Higher Himalaya	Above 5,000 m	24	Covered by snow and ice for almost all the year, major region for the source of water resources (rivers)
High Mountains	3,000 – 5,000 m	20	Alpine and sub-alpine climate
Lesser Himalaya or Middle Mountains	1,000 – 2,000 m	30	Composed of a network of mountain ridges, valleys and gorges
Siwalik or Chure	500 – 1,000 m	12	Contains series of low ridges in a twisting pattern
Tarai	Below 500 m	14	Flat plains, hot monsoon

Source: Modified from MoE, 2010

Of the physiographic regions of Nepal, Tarai plain and Siwalik are the potential areas for construction materials (sand and gravel), ground water and petroleum resources. Lesser Himalaya is promising for metallic minerals, industrial minerals, marble, gemstones, fuel minerals, and construction materials. Some of the areas in Higher Himalaya have potential for precious and semiprecious stones, marble and metallic minerals. Similarly, Tibetan Tethys, which lies in north of Higher Himalaya, is prospective for limestone, gypsum, brine water (salt) and natural gas (http://www.dmgnepal.gov.np).

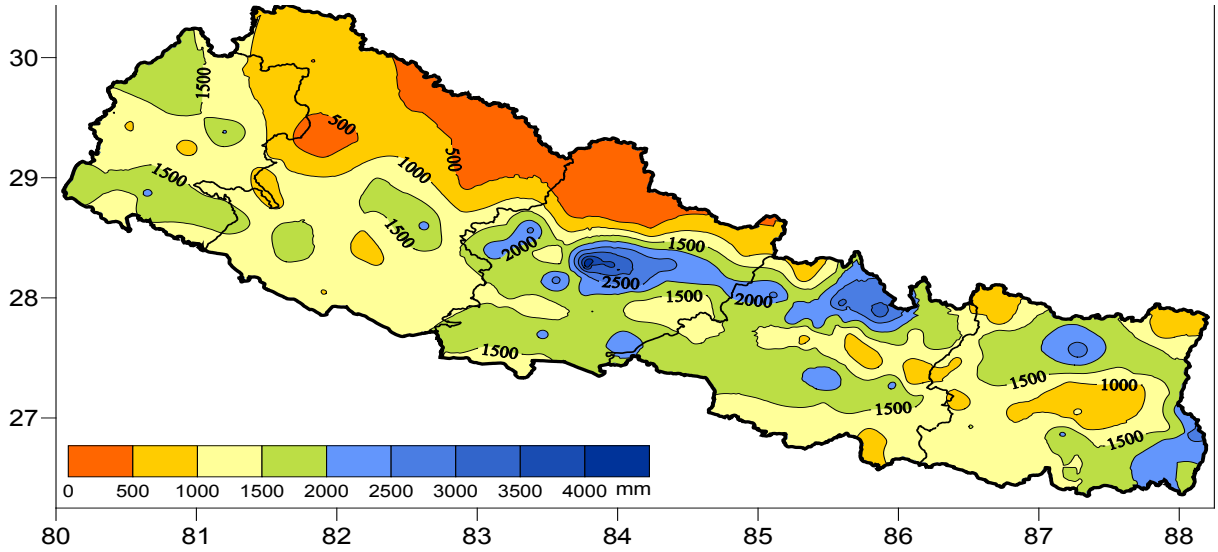
Nepal, based on size, is ranked 93rd in the world. It has 9 out of the 14 world's highest peaks that exceed above 8,000m in height including the world's highest peak, Mount Everest. The country represents a transitional zone of two bio-geographical realms: the Palaearctic and the Indo-Himalayan resulting in uniqueness in forest types, landscapes and biodiversity.

5.1.2 Climate

Different types of climate are found in Nepal ranging from the tropical humid type in the Tarai to colder, dry continental and alpine through the middle and the northern mountainous regions. The Tarai and the Siwalik regions have a hot monsoon or tropical/subtropical climate with hot, wet summers and mild, dry winters. The Lower Middle Mountains have a warm temperate monsoon climate with warm, wet summers and cool, dry winters. Similarly, the Middle Mountains have a cool temperate monsoon climate, with mild wet summers and cool, dry winters. The High Mountains have an alpine/sub-alpine climate, with cool summers and frosty winters and the High Himalaya above the snowline has a tundra type arctic climate, with perpetual frost and cold desert conditions.

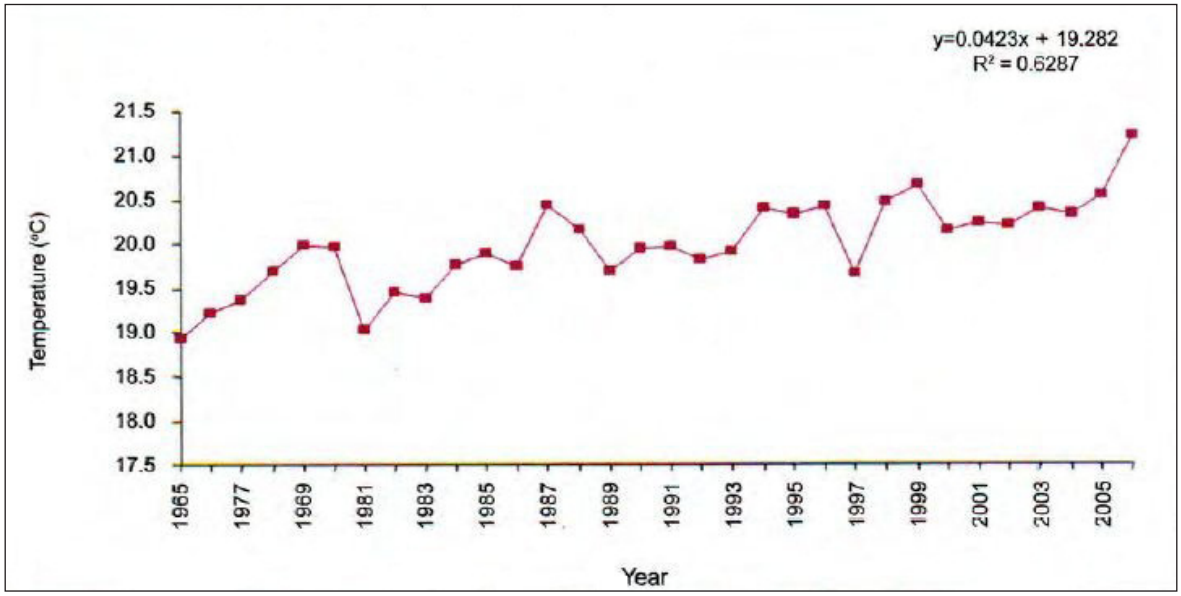
Precipitation varies considerably throughout the regions of Nepal (Figure 5.1) Average annual rainfall for the whole country is approximately 1800 mm, and it ranges from 250 mm to 4500 mm (DHM, 2010). There are two rainy seasons. The more prominent of the two lasts from June to September when the southwest monsoon brings about 80% of the total rainfall. The other, which accounts for 20% of the total annual rainfall, occurs during the winter. The eastern part of the country experiences more rain than the western part. The downpour is highest in the hilly regions of the central part of the country. It is particularly so at the southern flanks of the Annapurna Range and continues to decrease both on the northern and southern sides. This is mainly due to the highly spatially varying topography resulting in varying orographic effects in the country (WECS, 2011). Snowfall is confined to the northern and western mountainous regions, especially at elevations above 3,500 meters.

Figure 5.1: Monsoon rainfall in Nepal (Source: DHM, 2010)



The ranges of temperature also vary considerably in Nepal. Mean temperature of the country is around 15°C and this increases from north to south, with the exception of mountain valleys. In Tarai the average temperature is above 25°C, while it is around 25°C in Siwaliks, about 20°C in the Middle Mountains and between 10 and 20°C in High Mountains. The maximum temperature during the summer and late spring, being the warmest season, ranges from more than 40°C in the Tarai to about 28°C in the mid-section of the country (WECS, 2011). Much colder temperatures prevail at higher elevations. Nepal's temperature trend over time is provided in Figure 5.2

Figure 5.2: All Nepal temperature trend (Source: DHM, Nepal; cited from MoE, 2011)



5.1.3 Demography

Nepal is a multi-lingual, multi-religious, multi-ethnic and multicultural country inhibited by 125 castes and ethnic groups. Population distribution is very unequal in terms of ecological regions. The population of Nepal as of the census day (June 22, 2011) stands at 26,494,504. The increment of population during the last decades is recorded as 3,343,081 with an annual average growth rate of 1.35%. The population of Nepal is distributed as 6.7%, 43.0% and 50.3% in three ecological belts, Mountains, Hills and Tarai respectively. The population density of Nepal has been estimated to be 180 per sq. km, with a population density of 34, 186 and 392 persons per sq. km respectively for Mountains, Hills and Tarai regions of Nepal. Among the 75 districts in Nepal, Kathmandu district has the highest density of 4,416 persons per sq. km and Manang district the least density of 3 persons per sq. km (CBS, 2011; http://www.cbs.gov.np).

5.1.4 Economy

Nepal's economy is based largely on the use of natural resources, particularly agriculture land, forests, wetlands and rangelands. Agriculture (including fishery) and forestry remain the country's principal economic activities, and employ 80% of the population and constitute about 35% of the total Gross Domestic Product (GDP). At the national level, 28% of all households income comes from agriculture and forestry, 37% from nonfarm enterprises, 17% from remittances and 16% from own housing consumption (CBS, 2011). Nepal ranks in 145th position in the Human Development Index (HDI) (UNDP, 2014).

The Gross Domestic Product (GDP), which indicates the economic status of the country to a great extent, in the year 2010/11 and 2011/12 was about US $714 and US $706 respectively and the estimate for 2012/13 is about US $717. The economic growth measured by the GDP was 3.56% in 2012/2013. About one fourth of the population (25.16%) live below the poverty line as per the Nepal Living Standards Survey 2010/11 and the Gini-Coefficient, which indicates inequality in income distribution, is 0.328 (CBS, 2013a). Table 5.2 shows some important macroeconomic indicators of Nepal.

Table 5.2: Important macroeconomic indicators of Nepal

Indicators	2010/11	2011/12	2012/13*
Annual growth rate GDP (%)	3.85	4.48	3.56
Per capita GDP, current prices (NRs.)	51,594	57,202	62,510
Per capita GDP (US $)	714	706	717
Export of goods and services/GDP (%)	8.9	10.02	10.34
Import of goods and services/GDP (%)	32.92	33.40	38.79

Source: CBS, 2013a
**provisional*

The structure of the Nepalese economy has been changing gradually over time. The contribution of the agriculture and industry sectors to the GDP has showed a declining trend overtime, while the opposite is true for the services sector. While classifying the GDP into agriculture and non-agriculture sectors, the contribution of the agriculture sector showed a declining trend while the non-agriculture sector showed the opposite. The contribution of the agriculture sector to the GDP at current prices stood at 37.4% in FY 2001/02, while it declined to 33.1% in the fiscal year 2013/14 (MoF, 2014).

As it has been indicated, agriculture is the most important sector of the economy and the majority of the Nepalese population is supported by it. All the efforts made to increase agricultural output and productivity have met with little success mainly due to increasing population density and the consequent decrease of cultivable land per capita. Table 5.3 shows the production of important crops of Nepal from 1952 to 2011. The production of these crops is the major source contributing to the subsistence intensive economy of the country.

Table 5.3: Production (metric tons) of important crops of Nepal

Census years	Total paddy production	Total maize production	Total millet production	Total wheat production	Total barley production
1952-54*	2,500,000	831,000	60,000	122,500	16,500
1961/62	2,108,000	843,000	63,000	138,000	20,000
1971/72	2,344,000	759,000	130,000	223,000	25,000
1981/82	2,560,080	751,520	121,710	525,930	23,320
1991/92	3,222,540	1,204,710	228,660	761,960	27,640
2001/02	4,164,687	1,510,770	282,570	1,258,045	30,790
2011/2012	5,072,249	2,179,414	10,021	1,846,193	34,816

Source: MOAD Datasets
**average of 1952 and 1954*

5.2 Methodology

Secondary data sources were reviewed for preparing this chapter. Data published from governmental, non-governmental and international non-governmental organisations have been taken as references. Some data sources were the output of synergistic efforts of both governmental and non-governmental organisations.

Data sources from government include:

Central Bureau of Statistics Datasets - Population Census Datasets, Population Monograph of Nepal, Environmental Statistics of Nepal (2013); Department of Forest Research and Survey - Tarai Forests of Nepal, Churia Forests of Nepal; Ministry of Agriculture Development Datasets - Agriculture Census Datasets; Solid Waste Management and Technical Support Centre - Solid waste related data; Ministry of Science, Technology and Environment - NAPA, information regarding climate change issues and impacts; Department of Environment – Ambient Air Monitoring Datasets; Ministry of Home Affairs – Nepal Disaster Reports; Department of Hydrology and Meteorology – Climatic Data; Water and Energy Commission Secretariat – Energy Synopsis Report; Ministry of Finance – Information on economic status of the country.

Data sources from national and international non-governmental organisations include:

National Trust for Nature Conservation - Bagmati Action Plan: for water quality related data; International Centre for Integrated Mountain Development – Publications focusing on climate related issues and GLOF; Asian Development Bank – Solid waste related data; Practical Action, Nepal – Climate related data; Other references (publications of other related stakeholders and individuals).

While preparing this chapter, major issues listed in the Framework for Development of Environmental Statistics (FDES) were considered. FDES is a multi-purpose conceptual and statistical framework that is comprehensive and integrative in nature and combines data from various relevant subject areas and sources of environment.

5.3 Trends of population growth

The first census carried out in Nepal during 1911 determined the total population of the country to be 5.63 million. A slight decrease in the population was observed during 1920 and 1930 after which it started increasing

continuously from 1941 onwards. There were 9.41 million people in the country in 1961, which reached 11.55 million and 15.02 million in the years 1971 and 1981 respectively. The next population census in 1991 recorded a total population of 18.49 million. The population census of 2001 recorded a population of 23.1 million with an annual rate of growth equal to 2.25%. Similarly the population census of 2011 determined the total population of Nepal as 26.49 million with an average annual growth rate of 1.35% (Table 5.4)

Table 5.4: Population of Nepal (1911 to 2011)

Year	Total population	Change in population	Increase rate	Doubling time
1911	5,638,479	-	-	-
1920	5,573,788	64,961	-0.013	-
1930	5,532,774	41,214	-0.07	-
1941	6,283,649	751,075	1.16	60 years
1952-54	8,256,625	1,972,976	2.28	31 years
1961	9,412,996	1,156,371	1.64	42 years
1971	11,555,983	2,142,987	2.05	34 years
1981	15,022,839	3,466,856	2.62	26 years
1991	18,491,097	3,468,258	2.08	33 years
2001	23,151,423	4,660,326	2.25	31 years
2011	26,494,504	3,343,083	1.35	52 years

Source: CBS, 1991, 2001, 2011

Table 5.5 depicts that the percentage share of the population is increasing in the Tarai region. Similarly, the percentage of population is a decreasing trend in Mountains and Hills over the intercensal periods. This clearly shows the migration of the population from Mountains and Hills to the Tarai region. However, in all cases the population density is increasing due to the increasing rate of population growth in Nepal (Table 5.6).

Table 5.5: Population of Nepal as per ecological regions (1971 to 2011)

Ecological regions	1971	1981	1991	2001	2011
Mountains	1,138,610 (9.9)	1,302,896 (8.7)	1,443,130 (7.8)	1,687,859 (7.3)	1,781,792 (6.7)
Hills	6,071,407 (52.5)	7,163,115 (47.7)	8,419,889 (45.5)	10,251,111 (44.3)	11,394,007 (43.0)
Tarai	4,345,966 (37.6)	6,556,828 (43.6)	8,628,078 (46.7)	11,212,453 (48.4)	13,318,705 (50.3)
Nepal	11,555,983 (100)	15,022,839 (100)	18,491,097 (100)	23,151,423 (100)	26,494,504 (100)

Source: CBS, 2003; CBS, 2014
Figures in parenthesis indicate percentage

Table 5.6: Population density as per ecological regions of Nepal (1971 to 2011)

Population parameter	Year	Physiographic regions				Total population
		Mountain	Hill	Tarai	Total	
Density per sq. km.	1971	22.0	99.0	127.8	78.5	11,555,983
	1981	25.1	116.8	192.7	102.2	15,022,839
	1991	27.9	137.3	253.6	125.6	18,491,097
	2001	33.0	167.0	330.0	157.0	23,151,423
	2011	34.0	186.0	392.0	180.0	26,494,504

Source: CBS, 2003; CBS, 2014

The growing population in Nepal can be linked with different impacts it has on the environment. Increasing demand for resource use and consumption has a direct impact and could cause deterioration of the environmental situation in Nepal.

5.4. Growing population and environmental problems in Nepal

Environmental degradation is becoming one of the biggest problems in Nepal. The problems are due to short-sighted behaviours such as the generation of unregulated emissions of air pollutants, direct discharge of water pollutants in aquatic ecosystems and haphazard disposal of waste. With the increase in human population, which is a dynamic factor for environmental degradation, natural resources are under increasing pressure creating; a depletion of resources; fragmenting and eliminating the habitat of plants and animals; causing ecosystem degradation; water shortages; loss of forests; air and water pollution and degradation of riverine ecosystems; altering regional climates and their dynamism; and also increasing health and environmental costs. All these issues are because more people are demanding more resources and generating more waste. Population growth and distribution have significant roles to play in the sustainability of natural resources. With the growth of the population, people's lifestyle and consumption patterns directly affect the environment. At the same time, human activities are also degrading the capacity of natural ecosystems to regenerate or maintain renewable resources and ecosystem services, converting the ecological services to economic services.

The linkages between human activity and environmental degradation are myriad and complex. But simplifying the nexus, contributing factors can be grouped into three categories: human population size, the per-capita rate of consumption of energy and materials that contribute to affluence, and the impacts stemming from the technologies used to provide the per-capita rate of consumption. Expressing these factors with an ''equation'' takes the following form:

> Environmental **I**mpact = **P**opulation Size x per capita **A**ffluence level x impact from the **T**echnologies used to achieve that level of per-capita affluence

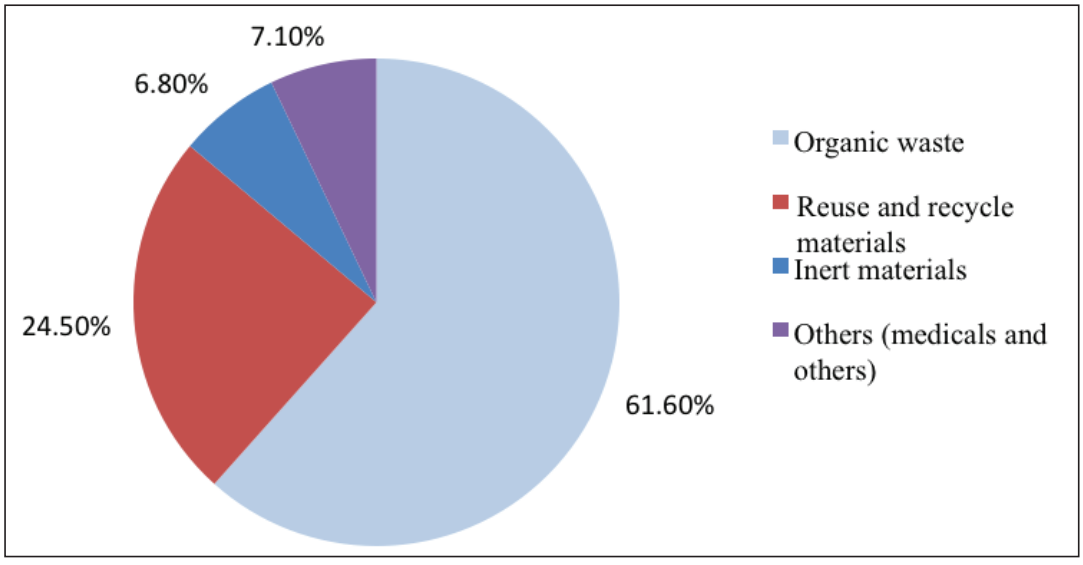
This ''IPAT equation'' (Ehrlich & Holdren, 1971; cited by Harte, 2007) is a useful equation showing the link between population, affluence, and technology and the significant role each of these plays in determining environmental impact. The expanded version of 'IPAT equation' separated technology into two factors: resource intensity (how many reserves are used to produce earth unit of consumption) and waste intensity (how much waste each unit of consumption generates) and also considers the sensitivity of the environment.

5.4.1 Solid waste

Management of solid waste is one of the major environmental issues in Nepal, especially in urban areas. The urban population growth and changing consumption patterns has resulted in the increased generation of waste. An increasing use of packaged food items, plastics and other modern household appliances are some of the examples indicating changing consumption pattern, especially in urban areas of Nepal. Moreover, healthcare waste management issues are also prevalent with the increase in the number of hospitals operating (currently 301 private hospitals and 102 government hospitals which are directly under the MoHP) in the country (CBS, 2013c). While waste segregation has been started in most of the hospitals, other aspects of healthcare waste management such as transportation and disposal are neglected; in many cases it is disposed along with municipal solid waste. Similarly, the generation and management of electrical and electronic wastes and hazardous waste is also an emerging concern in urban areas. Solid waste management practices in different municipalities such as dumping in riverbanks, roadsides, or other low-lying lands, or in open pits or temporary open piles, without significant technical and socio-economic studies, is also another problem of solid waste management.

A survey conducted by Solid Waste Management and Technical Support Centre (formerly Solid Waste Management and Resource Mobilisation Center) has determined different waste fractions in terms of percentage composition by wet weight obtained from the analysis of waste samples of each municipality. The average physical composition of household waste of 58 municipalities was grouped in four major waste components, i.e. organic waste, recyclable, inert and others (with average values by wet weight %), that play a vital role in treatment and recycling/resource recovery aspects of waste management. This information is represented graphically in Figure 5.3. The study showed that 61.6% of the municipal waste constitutes organic waste (SWMRMC, 2008).

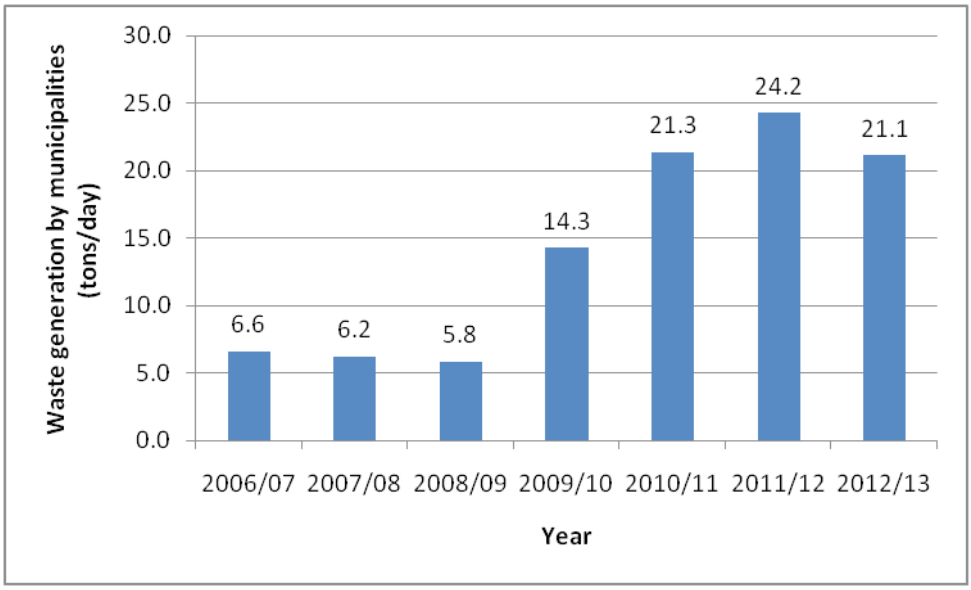
Figure 5.3: Average value (by wet weight) of waste in municipalities (Source: SWMRMC, 2008)



Similarly, a study conducted by the Asian Development Bank (ADB), showed that the average composition of Municipal Solid Waste is 56% organic waste, 16% plastics, 16% paper and paper products, 3% glass, 2% metals, 2% textiles, 1% rubber and leather, and 4% others (ADB, 2013).

Figure 5.4 shows waste production by 58 municipalities from 2006/07 to 2012/13, reflecting the increasing trend of generation of solid waste in recent years, except a slight decrease for the year 2012/2013. The generation of solid waste in the newly declared 72 municipalities may reflect similar conditions due to related circumstances faced by all municipalities such as inadequate technical, infrastructural and financial resources to tackle the problem of waste management. It should be noted, that with increasing public awareness about the necessity of healthy living and proper sanitation, solid waste management has now become a priority of many municipalities in Nepal.

Figure 5.4: Average waste generation by municipalities of Nepal



Source: CBS, 2013b

A study by ADB on solid waste of different municipalities in different ecological regions recorded different average household waste generation rates (Table 5.7). Tarai municipalities generate the largest amount of per capita daily waste (ADB, 2013). The household waste composition analysis of 58 municipalities from the study indicates that the highest waste fraction is organic matter (66%), followed by plastics (12%), paper and paper products (9%), others (5%), and glass (3%). Metal, textiles, and rubber and leather each accounted for 2%, 2% and 1% respectively (ADB, 2013). The high organic content indicates a need for frequent collection and removal, as well as good services for organic waste resource recovery. The content of major reusable and recyclable materials (i.e., plastic, paper and paper products, metal, glass, rubber and leather, and textiles) comprised 29% on average.

It is also noteworthy that the composition of household waste varied greatly among different geographical locations. Table 5.7 compares the average household waste composition of municipalities in different ecological regions: Mountains, Hills, and Tarai. The organic fraction was comparatively higher in the Tarai municipalities than in the Mountain and Hill regions.

Table 5.7: Average generation and composition (%) of household wastes in different ecological regions

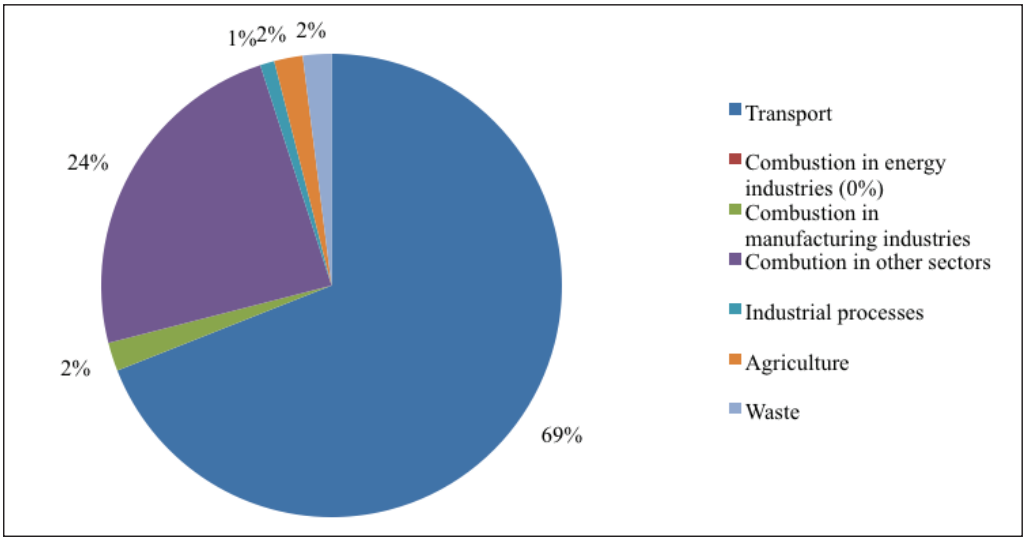
Composition	Ecological regions		
	Mountain municipality	Hill municipality	Tarai municipality
Average daily waste generation (kg/ households)	0.49	0.72	0.88
Organic waste	51	65	69
Plastics	11	13	10
Paper and paper products	11	9	9
Glass	3	4	2
Metals	3	2	2
Textiles	4	3	2
Rubber and leather	1	1	1
Others	16	3	6

Source: ADB, 2013

5.4.2 Air and water pollution

The emission inventory carried out by ICIMOD in Kathmandu Valley shows the total emissions from human activities from all uses to be close to 196 tons per year. More than half the emissions were determined to be of particulate matter (PM_{10} and $PM_{2.5}$); followed by CO, the second major pollutant contributing 32%, while all of the other pollutants combined contributed about 16% (ICIMOD, 2012). Resuspension of dust from roads by vehicles is one of the major factors for the high value for particulate matter in the ambient concentration. Figure 5.5 highlights total emissions from different sectors in Kathmandu Valley. The results showed that the transportation sector accounted for 69% (136 tons per year) of the total pollution load. Combustion from energy was negligible, and combustion from manufacturing industries accounted for only 2%, while combustion in other sectors (residential, commercial, and forestry) was responsible for 24% of the load (49 tons per year).

Figure 5.5: Total emissions from different sectors in Kathmandu (Source: ICIMOD, 2012)



The ambient air quality monitoring in three of the stations: Bhaktapur, Machhegaun and Putalisadak of Kathmandu Valley, measuring PM10 levels on a daily basis showed that the values are higher than the National Ambient Air Quality Standards (2069) value in urban settings in Putalisadak and the semi-urban setting of Bhaktapur (Table 5.8) The National Ambient Air Quality Standards for PM10.is 120 μg/m3 for 24 hours averaging time.

Table 5.8: Air quality in three stations of Kathmandu Valley

SN	Month	Machhegaun			Putalisadak			Bhaktapur		
		Max	Min	Avg.	Max	Min	Avg.	Max	Min	Avg.
1.	Baisakh, 2070 (17th April – 16th May, 2013)	93	3	47.29	407	65	190.67	192	51	119.5
2.	Kartik, 2070 (20th Oct - 15th Nov, 2013)	51	17	33.41	585	220	416.48	148	51	101.64
3.	Mangsir, 2070 (16th Nov – 15th Dec, 2013)	32	15	20.73	462	190	360.83	112	30	86.73
4.	Poush, 2070 (16th Dec 2013 – 14th Jan, 2014)	55	30	42.00	355	83	277.63	175	102	128.8
5.	Magh, 2070 (15th Jan – 12th Feb, 2014)	93	31	57.05	397	118	259.75	151	112	132.34
6.	Falgun, 2070 (13th Feb – 14th Mar, 2014)	85	21	46.97	382	64	233.02	152	80	121.73
7.	Chaitra, 2070 (15th March – 13th April, 2014)	166	54	89.64	411	122	269.87	236	120	182.67
8.	Baisakh, 2071 (14th April – 14th May, 2014)	105	76	93.53	386	287	321.91	216	99	176.63
9.	Jestha, 2071 (15th May – 17th May, 2014)	104	96	99.33	317	287	300.67	211	174	192.27
Average				**58.88**	**Avg.**		**292.31**	**Avg.**		**138.03**

Daily data available from http://doenv.gov.np

In Nepal about 64% of households cook their food using wood/firewood on open fires or traditional stoves (Table 5.9). Such cooking practices produce high levels of household (indoor) air pollution, which includes a range of health damaging pollutants such as fine particles and carbon monoxide. In poorly ventilated houses, smoke in and around the home can exceed acceptable levels for fine particles. In Nepal, exposure is particularly high among women and young children, who spend most of their time near the fires.

Table 5.9: Households by usual type of fuel used for cooking

Area	Total	Wood/ firewood	Kero-sene	LP gas	Cow dung	Biogas	Elec-tricity	Others	Not stated
Nepal	5,423,297	3,470,224	55,610	1,140,662	563,126	131,596	4,523	22,583	34,973
Ur-ban	1,045,575	268,643	20,990	707,674	15,776	19,121	1,255	4,107	8,009
Rural	4,377,722	3,201,581	34,620	432,988	547,350	112,475	3,268	18,476	26,964

Source: CBS, 2011

Table 5.10 reflects the exposure to TSP and CO due to the emission from traditional stoves. It shows that the concentration of TSP is higher than 1500 μg/m^3 in all the sampled hilly districts of Nepal. Similarly, the exposure to CO is more than 60 ppm in all the studied districts.

Table 5.10: Exposure to TSP and CO on traditional cooking stoves

Study location	Pollutant	Exposure on traditional stoves	Source
Gorkha	TSP (μg/m3)	3170	Reid, 1996
	CO (ppm)	280	
Beni	TSP (μg/m3)	3110	Reid, 1996
	CO (ppm)	310	
Mustang	TSP (μg/m3)	1750	Reid, 1996
	CO (ppm)	64	
Bardibas	TSP (μg/m3)	8200	Pandey, 1990
	CO (ppm)	82.5	

Source: Practical Action, 2009

Water pollution is also a growing concern particularly in urban areas of Nepal. An increasing trend of Biochemical Oxygen Demand (BOD) and a decreasing trend of Dissolved Oxygen (DO) in the rivers indicates the degradation of water quality. Urban rivers are degrading significantly as they flow down towards densely populated city cores. Table 5.11, based on the MWSP (2000) study, shows the status of water quality of the Bagmati River with different parametres in upstream at Sundarijal and downstream at Khokana. The values indicate the scenario of degradation after passing through urban population areas. As shown in the table, water quality parametres reflect that Bagmati River water is still pristine in the upstream region (except for the occurrence of Coliform) but gets heavily polluted as it subsequently reaches city cores and passes downstream.

Table 5.11: Water quality parameters of Bagmati River

Parameters	Sundarijal (upstream)	Khokana (downstream)
Total Suspended Solids (mg/L)	5	70
Chloride (mg/L)	1	24
Ammonia (mg/L)	0.03	11
Biochemical Oxygen Demand (mg/L)	1.3	65
Coliform counts (per 100 mL)	1000	1,000,000
Dissolved Oxygen (mg/L)	8.9	1.7

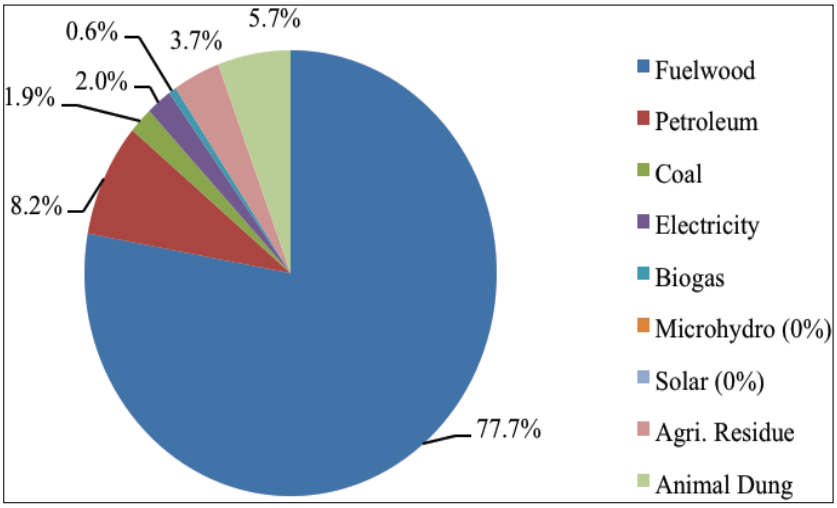
Source: MWSP, 2000

5.4.3 Rising demand for energy use

Nepal's energy resources can be classified into three categories: traditional, commercial and renewable. Traditional energy (which makes up 87% of the total energy consumption) resources include fuel, wood from forests and tree resources, agricultural residues coming from agricultural crops and animal dung in its dry form. Similarly, commercial and renewable energy resources make up 12% and 1% respectively of the total energy consumption in Nepal.

Traditional energy resources can be termed as biomass energy resources since they include bio-materials for energy purposes. Energy resources coming under commercial or business practices are grouped into commercial energy resources that include coal, grid electricity and petroleum products. Biogas, solar power, wind and micro level hydropower are categorised into renewable energy resources in Nepal. Such resources are considered a supplement of conventional energy resources. As illustrated in Figure 5.6, total energy consumption in 2008/09 in the country was about 9.3 million tons of oil equivalent (401 million GJ). Of this 77%, 5.7% and 3.7% was derived from fuel wood, animal dung and agricultural residue (traditional resources) respectively, 8.2%, 2.0% and 1.9% was derived from petroleum, electricity and coal (commercial resources) respectively and less than 1% from renewable sources (WECS, 2010).

Figure 5.6: Total energy consumption by fuel types (Source: WECS, 2010)



People of Nepal have traditionally depended on forests for the supply of fuel wood, fodder, timber and other forest products. In Nepal, forests (with more than 10% canopy) cover 29% of land and shrub cover 10.6% of land; both forest and shrub together cover 39.6% of land (DFRS, 1999). This heavy pressure on forests combined with population growth has resulted in serious environmental problems.

The use of traditional forms of energy has resulted in negative effects on livelihoods and the health of the people of Nepal. Additionally, the use of these traditional sources is neither sustainable nor desirable from an environmental point of view. Therefore, there is a need to replace or supplement these energy resources with modern forms of renewable energy. The available and potential sources of renewable energy that could be developed in Nepal are water, sun, biogas, wind, biomass, hot springs etc. These renewable energy sources are un-interruptible and infinitely available due to their widespread complementary technologies, which can accommodate the country's need for a diverse supply. These energy sources are environmentally friendly as they have very little or no negative impact on the environment, climate, or physical and topographical environment. Table 5.12 shows the increase in use of renewable energy over the years but the rate of increase is not as expected. Furthermore, Table 5.12 also shows the total energy consumption from 2000/01 to 2008/2009. It indicates that energy consumption is an increasing trend over time in Nepal.

Table 5.12: Total renewable energy consumption by years (unit in '000 GJ)

Category	Fuel type	**2000/01**	**2001/02**	**2002/03**	**2003/04**	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**
Renewable	Biogas	1179.2	1350.1	1526.5	1650.3	1847.5	2027.2	2222.1	2384.2	2593.1
	Microhydro	38.1	41.7	47.2	52.8	56.9	65.1	90.2	112.7	136.0
	Solar	0.3	0.9	1.7	2.2	2.7	2.9	3.1	4.1	5.6
Renewable total		1217.5	1392.8	1575.5	1705.3	1907.2	2095.2	2315.4	2501.0	2734.6
Total energy consumption		335420.9	347329.3	353452.5	361837.0	367207.4	376785.8	381049.9	388382.1	400506.4

Source: WECS, 2010

5.4.4 Pressure on land and change in forest coverage

Population growth is creating an increasing pressure on the natural resources of Nepal, as illustrated by the shrinking size of land per capita with the increase in population (Table 13). The land area per capita has changed from 2.6 ha in 1911 to 0.56 ha per capita in 2011. The ecological footprint of the people of Nepal is increasing but on the contrary there is a decrease in the land footprint. Similarly, agricultural land per capita also seems to be decreasing over the years. During 1961, agriculture land per capita was 0.173 ha but gradually decreased over the census years. During 2011, the value of agriculture land per capita was 0.089 ha (Table 5.13).

Table 5.13: Total land area and total agriculture land per capita

Census	Population	Total land area (ha)	Land area (ha) per capita	*Agriculture land ('000 ha)	Agriculture land (ha) per capita
1911	5,638,479	14,718,100	2.610	-	-
1920	5,573,788		2.641	-	-
1930	5,532,774		2.660	-	-
1941	6,283,649		2.342	-	-
1952-54	8,256,625		1.783	-	-
1961/62	9,412,996		1.564	1,626,400	0.173
1971/72	11,555,983		1.274	1,592,300	0.138
1981/82	15,022,839		0.980	2,359,200	0.157
1991/92	18,491,097		0.796	2,392,900	0.129
2001/02	23,151,423		0.636	2,497,700	0.108
2011/2012	26,494,504		0.556	2,363,100	0.089

**Source: MoAD, 2011*

Similarly, the total forest area is decreasing in Nepal. In 1978/79, 1985/86 and 2001/02, the total forest area was determined to be 5,612,400 ha, 5,518,000 ha and 4,268,200 ha respectively (CBS, 2013b). A recent study has shown that the forest area in Tarai has declined by 16,500 ha in the last nine years from 2001 to 2010 and by 32,000 ha in the last 19 years from 1991 to 2001. The annual rate of decrease in forest cover was 0.44% during the last nine years from 2001 to 2010 and was 0.40% during the last 19 years from 2001 to 2010 (DFRS, 2014a). The substantial forest-cover losses were most predominant in the Tarai Districts, with positive trends in Banke, Nawalparasi and Siraha districts between 2001 and 2010 (Table 5.14).

Table 5.14: Forest cover change in the Tarai between 1978/79 and 2010/11 ('000ha)

Development region	District	LRMP 1984	DoF 1991	DoF 2001	FRA 2010/11	Rate of change	
						1991-2010/11	2001-2010/11
Far Western	Kanchanpur	71.9	58.1	57.5	56.2	-0.18	-0.25
	Kailali	96	79.2	73.2	71.2	-0.56	-0.31
Mid-Western	Bardiya	53.6	50.6	47.7	46.6	-0.43	-0.24
	Banke	48.6	38.8	37.3	39	0.03	0.48
Western	Kapilvastu	34	43.3	40.8	37.5	-0.76	-0.95
	Rupandehi	12.3	7.8	6.7	6.5	-0.93	-0.31
	Nawalparashi	7.2	3.2	3.2	3.2	0.02	0.2
Central	Parsa	24.5	25.5	25.9	24.6	-0.19	-0.6
	Bara	32.9	32.6	32.2	30.8	-0.29	-0.49
	Rautahat	22	20.2	20.3	18.6	-0.43	-0.96
	Sarlahi	15.1	13.3	13.9	11.5	-0.74	-2.07
	Mahottari	10.8	9.5	10	9.4	-0.04	-0.61
	Danusha	0.2	0.3	0.5	0.3	-0.76	-5.7
Eastern	Saptari	2.4	2.7	2.1	2	-1.39	-0.12
	Siraha	0.4	2	1.7	2.1	0.39	2.57
	Sunsari	16.9	15.4	14.9	14.2	-0.45	-0.57
	Morang	30.9	24.2	23.7	23.5	-0.16	-0.09
	Jhapa	12.3	13.4	13.2	11	-1.06	-2.03
Total		**492.1**	**440.1**	**424.6**	**408.1**	**-0.4**	**-0.44**

Source: DFRS, 2014a

Likewise, the total forest area in Churia has decreased by 38,051 ha over the period of 15 years from 1995 to 2010. The annual rate of forest cover change was about -0.18% per year during this period (Table 5.15).

Table 5.15: District-wise forest cover change (ha) in Churia region during the period from 1995 to 2010

Parameters	Forest 1995	Forest 2010	Change in area (ha)	Annual rate of change (%)	Land proportion of district within Churia
Churia total	1,411,794	1,373,743	-38,051	-0.18	12.84

Source: DFRS, 2014b

One of the primary reasons for degradation of the forests and grasslands is encroachment and overuse by rising populations in the districts. Encroachment in the form of overgrazing by livestock is one of the factors of the exploitation of the ecosystems, although livestock rearing is an essential component of the rural farming system and a source of annual farm income. Grazing in the forest by livestock, especially in Tarai and Siwaliks, is heavy and goes on all year round. Although some farmers have private fodder trees and private forest land, these are rarely sufficient to meet the year-round food requirements of their livestock.

5.4.5 Human settlements and urbanization

The demographic and economic shifts of the last decades have transformed Nepal, making cities and urban centres the dominant habitats. Consequently, urbanisation in Nepal is intensifying environmental problems and challenges, such as a lack of water and sanitation, a lack of scientific solid waste management approaches, electricity outage, unplanned infrastructure development and excessive use of natural assets. Despite these problems, the population of urban areas is increasing because of available facilities and services. The population census of 2011 showed that about 17.07% of the total population live in 58 municipalities of Nepal. The number during the census of 2001 was only 14.20%. Of the urban areas, the maximum population, at 1,744,240, is in Kathmandu, which was 1,081,845 during the census of 2001. It seems that over 10 years the population of Kathmandu Valley has increased by 61.23 % and about 4.78% per year.

The urban population to the total population ratio is increasing in Nepal (Table 5.16). In the 1952-54 census the urban population to the total population ratio was 0.029 but it has been gradually increasing and reached 0.171 during the census of 2011. An inverse scenario has been observed in the rural population to the total population ratio. During 1952-54, the ratio of the rural population to the total population was 0.971 but it has gradually decreased with a ratio of 0.829 during the census of 2011.

Table 5.16: Scenario of urban and rural population

Census	Population			
	Urban	Urban population: total population ratio	Rural	Rural population: total population ratio
1952-54	238,275	0.029	8,018,350	0.971
1961	336,222	0.036	9,076,774	0.964
1971	461,938	0.040	11,094,045	0.960
1981	956,721	0.064	14,066,118	0.936
1991	1,695,719	0.101	16,795,378	0.908
2001	3,227,879	0.139	19,923,544	0.861
2011	4,523,820	0.171	21,970,684	0.829

Source: CBS, 2003; CBS, 2011

The massive flow of population from rural to urban areas has resulted in different environmental issues and impacts as described in the above sections. There is an immediate need to minimise these emerging environmental impacts in urban areas by creating opportunities to manage haphazard disposal of waste, limit urban sprawl, manage environmentally vulnerable areas and promote planning for dense cities with higher energy efficiency, especially in the domestic and transport sectors.

5.4.6 Climate change and its impacts in Nepal

There are growing concerns about the impacts of climate change in Nepal. The country is highly vulnerable to the potential negative impacts of climate change due to a weak economy, the fact it is landlocked, tectonically active and has difficult geographical terrain. Nepal is experiencing serious impacts of climate change in areas linked to livelihood such as agriculture, water resources, forest and biodiversity, and human health. Observed changes in temperature trend show the consistent warming and rise in the maximum temperatures at an annual rate of temperature of 0.04-0.06^{o}C (MoE, 2010). The warming however is not uniform across the country. Warming is more pronounced in high altitude regions compared to the Tarai and Siwalik regions. Climate change impacts in the above sectors have altered livelihood options in different ecological regions of Nepal. Climate

change has aggravated different risks and disasters in the country. Every year large numbers of human lives and property are lost due to climate change aggravated floods, landslides, heat waves, and cold waves. According to Germanwatch Global Climate Risk Index for 1992-2011, Nepal is ranked the 16th most vulnerable country in the world (Harmeling and Eckstein, 2012). The regional mean temperature trend in Nepal from 1977-2000, as reported by ICIMOD, shows that there is an increasing temperature trend in almost all parts of the ecological regions. Likewise, there is an increase in winter, pre-monsoon, monsoon and post monsoon temperatures in all the ecological regions (Table 5.17).

Table 5.17: Regional mean temperature trends in Nepal from 1977 to 2000 (°C/year)

Regions	Seasonal				Annual
	Winter Dec-Feb	Pre-monsoon Mar-May	Monsoon Jun-Sep	Post-monsoon Oct-Nov	Jan-Dec
Trans Himalaya	0.12	0.01	0.11	0.10	0.09
Himalaya	0.09	0.05	0.06	0.08	0.06
Middle Mountains	0.06	0.05	0.06	0.09	0.08
Siwalik	0.02	0.01	0.02	0.08	0.04
Tarai	0.01	0.00	0.01	0.07	0.04

Source: ICIMOD, 2010

Table 5.18 shows the land cover and land cover change in the Eastern Himalayas from the 1970's to 2000's. Extreme net change was observed for snow cover, with a reduction of 24.6% during this period. Similarly, the grassland and forestland in the region also seems to be decreasing

Table 5.18: Land cover change in the Eastern Himalayas over the period 1970s to 2000s (sq. km)

Broad land cover types	1970s	2000s	Change %
Forest	273,426	264,117	-3.4
Scrubland	43,050	60,443	40.4
Cultivated land	112,631	113,233	0.5
Grassland	39,902	36,639	-8.2
Bare land	22,589	23,953	6.0
Water bodies	4,119	4,108	-0.2
Snow cover	27,514	20,741	-24.6

Source: ICIMOD, 2010

In the context of Nepal, climate change poses an additional challenge to development. The impacts of climate change have affected the poorest communities with already vulnerable livelihoods. The following sub-sections describe the impacts of climate change on key sectors of Nepal.

Agriculture

Nepal has various types of agricultural zones from south to north such as plains, hills and mountains. Similarly, agricultural productions are different region wise from east to west. Climate change is expected to modify agricultural activities by causing an upward shift in the altitudinal boundaries of agro-ecological zones and the movement of certain crops, herbs, pasturelands, livestock and fish species to higher altitudes (NPC, 2011). An increase in temperature may cause more damage for agricultural sectors in the Tarai region and will be more favourable to agriculture activities in the Hills and Mountains. Climate change has some positive benefits in some regions. Land areas, which are presently unusable due to different weather extremities, may be desirable in the near future. For example: maize, chilly, tomato and cucumber are now being grown in Mustang district of the country. During the drought of Autumn 2008 to Spring 2009, agricultural systems experienced significantly reduced crop yields, resulting in food insecurity for millions. Such effects would be augmented by a more intense dry season. Western regions will be the most detrimentally affected because they rely on winter rains and cannot depend as reliably on summer monsoon rains alone, which are not as intense in the west due to the natural pattern of rainfall intensity from east to west (HMG, 2005).

Water resources

The effects of changes in precipitation and temperature are expected to change the water balance. Glacial melting and retreat, rapidly thawing permafrost and continually melting frozen soils in higher elevations is already being observed (Eriksson et al., 2009). In the sub-basins dominated by glaciers, this will mean increased downstream flows in the short term, but in the long term, runoff is expected to decrease with the retreating glaciers, causing major reductions in flow and significantly affecting downstream livelihoods and ecosystems (Bates et al., 2008). Table 5.19 shows that the number of glaciers increased by 11% (378) over the 30-year period but the glacier area decreased by 24% (1,266 km^2) and the estimated ice reserves by 29% (129 km^2). In the past 90 years, a glacier in the Sagarmatha region has receded 330 feet vertically. Likewise the Rika Samba Glacier in the Dhaulagiri Region is retreating at a rate of 10m per year (MoE, 2011).

Table 5.19: Glacier numbers, area and estimated ice reserve with years (1980 to 2010)

Year (AD)	Number	Area (km^2)	Estimated ice reserve (km^2)
1980	3430	5168.30	441
1990	3656	4506.3	370
2000	3765	4210.9	343
2010	3808	3902.4	312
Decadal change (1980-2010)	+11%	-24%	-29%

Source: ICIMOD, 2014

Another particularly significant threat in the Himalayas and directly correlated to rising temperatures are glacial lake outburst floods (GLOFs). Nepal has experienced at least 24 GLOF in the past. Of these, 14 are believed to have occurred in Nepal itself (Table 5.20) and 10 were the result of flood surge overspills across China.

Table 5.20: GLOF events recorded in Nepal

SN	Date	River basin	Lake	Cause
1.	450 years ago	Seti Khola	Machhapuchhre	Moraine collapse
2.	3 Sep 1977	Dudh Koshi	Nare	Moraine collapse
3.	23 Jun 1980	Tamor	Nagma Pokhari	Moraine collapse
4.	4 August 1985	Dudh Koshi	Dig Tsho	Ice avalanche
5.	12 Jul 1991	Tama Koshi	Chubung	Moraine collapse
6.	3 Sep 1998	Dudh Koshi	Tam Pokhari	Ice avalanche
7.	15 Aug 2003	Madi River	Kabache Lake	Moraine collapse
8.	8 Aug 2004	Madi River	Kabache Lake	Moraine collapse
9.	Unknown	Arun	Barun Khola	Moraine collapse
10.	Unknown	Arun	Barun Khola	Moraine collapse
11.	Unknown	Dudh Koshi	Chokarma Cho	Moraine collapse
12.	Unknown	Kali Gandaki	Unnamed (Mustang)	Moraine collapse
13.	Unknown	Kali Gandaki	Unnamed (Mustang)	Moraine collapse
14.	Unknown	Mugu Karnali	Unnamed (Mugu Karnali)	Moraine collapse

Source: Mool et al., 1995, 2001a; Yamada, 1998a; Bajracharya et al., 2008; Ives et al., 2010 cited from ICIMOD, 2011

Forests and ecosystems

Increased temperature and rainfall variability have resulted in shifts in altitudinal boundaries for plants, shrinking of plant's habitats, plant migration, species loss, a higher incidence of disease and pests, forest fires and an extension of drought periods, with a lasting impact on biodiversity (NPC, 2011). Studies show that new alien and invasive species (*Mikania micrantha, Parthenium hysterophorus*) are emerging and their habitat is spreading at a fast rate. Similarly, there has been an increased incidence of forest fires in recent years, a shifting of tree lines in the Himalaya and depletion of wetlands (MoFSC, 2014). Communities also have observed that they are experiencing seasonal changes in terms of sprouting, flowering, and fruiting. In some cases, these changes have benefited communities by increasing the ecological range of cultivation for certain crops. In other cases, climatic changes have negative impacts, for example, productivity of some species like *Dactylorhiza hatageria*, Rock Exedutes, *Imblica officianalis*, *Sapindus mukurosii*, *Zanthoxylum armatum*, and *Agle marmelos* are declining and shifting to higher altitudes and green grasses have declined sharply in the Himalayan region (MoE, 2011).

Human health

The incidence of vector borne diseases such as Malaria, Kalazar and Japanese Encephalitis, and water and food borne diseases such as diarrhoea, dysentery, typhoid, cryptosporidiosis, giardiasis, amoebiasis, gatritis, jaundice and infectious hepatitis have been increasing with the rise in temperature (DoHS, 2009; DoHS, 2007). Water and food borne diseases are an increasing trend both at temporal and spatial scale (NDHS, 2006). In addition to these disasters, temperature related illness and death from cold and heat waves have increased in recent years (DoHS, 2009). The historical evidences in Nepal indicate that prolonged droughts and flash floods have triggered disasters, famines, and disease outbreaks.

Energy

The water availability, quality and river discharges are very sensitive to changing climate. Climate change in this context directly affects hydropower generation and supply. About 87% of the population relies on traditional biomass for their energy supplies (WECS, 2010). In Nepal, about 90% of Nepal's electricity production is from hydropower. Irregularities in stream flow affect the reliability of hydropower, and siltation from floods and landslides events further reduces power generation efficiency.

The above discussion shows that climate change has impacted on key sectors of Nepal. The districts of Nepal have vulnerability towards climate change impacts as well. In this context, the MoE (2010) determined the combined climate change vulnerability of the districts of Nepal and the determined vulnerability rank of the districts is outlined in Table 5.21.

Table 5.21: Combined climate change vulnerability of districts of Nepal

Combined Vulnerability	Total Number of Districts	Districts
Very High	9	Kathmandu, Ramechhap, Udayapur, Lamjung, Mugu, Bhaktapur, Dolakha, Saptari, Jajarkot
High	17	Mahottari, Dhading, Taplejung, Siraha, Gorkha, Solukhumbu, Chitwan, Okhaldunga, Achham, Manang, Dolpa, Kalikot, Khotang, Dhanusha, Dailekh, Parsa, Salyan
Moderate	28	Sankhuwasabha, Baglung, Sindhuli, Bhojpur, Jumla, Mustang, Rolpa, Bajahang, Rukum, Rautahat, Panchthar, Parbat, Dadeldhura, Sunsari, Doti, Tanahu, Makwanpur, Myagdi, Humla, Bajura, Baitadi, Bara, Rasuwa, Nawalparasi, Sarlahi, Sindhupalchowk, Darchula, Kaski
Low	16	Nuwakot, Dhankuta, Kanchanpur, Bardiya, Kapilbastu, Terathum, Gulmi, Pyuthan, Surkhet, Argakhachi, Morang, Dang, Lalitpur, Kailali, Syanja, Kavrepalanchowk
Very Low	5	Ilam, Jhapa, Banke, Palpa, Rupandehi

Source: MoE, 2010

Since climate change has impacted on key sectors, there is an urgent and immediate need to implement integrated development interventions that enhance the adaptive and resilience capacity of climate vulnerable communities. In Nepal, climate change has particularly impacted on the following sectors.

5.4.7 Environmental hazards

Nepal lies in one of the most fragile and marginal areas of the world and is prone to natural and human induced disasters. Unstable steep slopes and a fragile geological formation of a young mountain range with heavy monsoon rainfall, leads to a wide range of geological and hydro-meteorological disasters in the country. The variation in geological characteristics, together with torrential rain during the rainy season, results in different natural hazards. The country is highly prone to natural hazards such as floods, landslides, drought, fires, and extreme weather events, including thunderstorms, epidemics, cold waves, GLOF and earthquakes. Of the 75 districts, 49 are prone to floods and/or landslides, 23 to wildfires, and one to windstorms (NDR, 2009). The data analysis from 1971-2010 shows that the frequency of natural disasters such as floods, landslides and fire has increased,

especially during the past two decades (Table 5.22). When hit by natural disasters, people not only risk losing their lives but also their means to earn a living. Moreover, recurring disasters in hazard-prone areas can stifle recovery and development efforts. Table 5.23 summarises the most lethal disaster types and their impact in Nepal from 1971-2012.

Table 5.22: Human death due to disasters at the interval of 10 years (1971 to 2010)

Year	Flood	Landslide	Other hydro-meteorological	Fire and forest fire	Epidemics	Earthquake	Others	Total
Average 1971-80	19.8	58.7	22.2	23.2	192.9	12.5	17.5	346.8
Average 1981-90	55.6	93.4	13.1	13.6	259.2	74.4	26.2	535.5
Average 1991-2000	172.3	126.2	57.5	54.6	776.1	0.1	12.1	1198.9
Average 2001-2010	142.2	154.4	121.7	44.1	425	0.3	129.3	1017
Average of 40 years	97	108	54	34	413	22	36	775

Yearly data taken from MoHA, DPNet-Nepal, UNDP, ActionAid Nepal and NSET, 2011

Table 5.23: Most lethal disaster types and their impact in Nepal (1971 to 2012)

SN	Disaster types	Number of events/records	Number of deaths	Number of injuries	Affected family	Destroyed houses	Damaged houses
1.	Epidemic	3446	16,563	43076	512,969	0	0
2.	Landslide	2942	4511	1566	555,705	18,414	13,773
3.	Flood	3685	4079	488	3665608	94700	87,261
4.	Fire	6999	1416	1347	255172	75581	2282
5.	Thunderbolt	1403	1200	2257	6729	379	427
6.	Accident	1000	969	359	2137	5	425
7.	Earthquake	105	880	6840	4539	33708	55318
8.	Cold wave	390	515	83	2393	0	0
9.	Structure collapse	389	404	596	2016	1170	623
10.	Boat capsize	140	279	140	410	0	0
11.	Others	2892	1092	1458	928492	5210	9998

Source: Desinventar, 2011; MoHA, 2011 and MoHA, 2013 cited from MoHA, 2014

Disasters are a serious impediment to Nepal's development and have undermined its development gains and its achievements in poverty alleviation and the Millennium Development Goals. The poor and the disadvantaged are hit the hardest by disasters. Table 5.24 reflects the scenario of human casualties due to major disasters in Nepal.

Table 5.24: Human casualties due to major disasters in Nepal (2000 to 2012)

Year	Flood and landslides	Fire	Epidemics	Thunder-bolt	Earth-quake	Avalanche
2000	173	37	141	26	0	0
2001	196	26	154	38	1	0
2002	441	11	0	6	0	0
2003	232	16	0	62	0	0
2004	131	10	41	10	0	0
2005	141	28	34	18	0	21
2006	114	3	0	15	0	0
2007	216	9	3	40	0	6
2008	134	11	10	16	0	0
2009	135	35	462	7	0	2
2010	240	69	36	70	0	0
2011	263	46	9	95	6	0
2012	123	77	33	119	1	9

Source: MoHA, 2014

5.5 Conclusion

Population growth is one of several interacting factors that exert pressure and increases strain on natural resources and the environment. Changes in energy consumption patterns, growth in unsustainable affluence, inequality in land distribution, poverty, and inefficient technologies, all exacerbate the degradation of the natural environment. Being a mountainous country, Nepal is susceptible to global environmental changes due to its fragile and marginal landscapes. Scenario of air and water pollution and solid waste management is deteriorating mainly in urban areas due to rapid, unplanned and unsystematic growth. Similarly, climate change in Nepal has caused impacts in key sectors like agriculture, water resources, forests and ecosystems, human health and energy. Furthermore, the current changes in the climate and its variability has increased the frequency and intensity of disastrous events such as floods and landslides.

Since very limited researches have been conducted concerning environmental domains, more research on environmental and other cross cutting issues is needed urgently to gather site-specific information and environmental strategic needs. In this context, environmental quality should be improved through a heightened awareness of the environment. There is also an urgent need to establish and strengthen institutions to keep harmony between population growth, urbanisation and environmental quality.

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CHAPTER 6

POPULATION AND STATUS OF AGRICULTURE

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Abstract

The contents of this chapter are divided into four sub components. The linkages between the population and agriculture, livestock, the activity rate in agriculture, and finally food security in the form of food balance sheet. In the last five decades the population of Nepal has increased from 9.4 million to 26.5 million, at the same time cultivated agriculture land has also increased from 1.6 million hectares to almost 2.5 million hectares with man land ratio almost doubling from 5.6 in 1961 to 10.5 in 2011; increasing the human pressure on cultivated land. In the same period the average farm size has gone down from 1.1 ha to 0.7 ha per holding. The per capita production of cereals has gone up from 286 to 345 kg between 1971 to 2011. The milk and meat production per capita per year has also gone up from 47 kg to 61 kg and 8 kg to 11 kg respectively in the last two decades from 1991 to 2011. Agriculture related data have been collected in Nepal since the 1950's for major crops, through different surveys, including basic agriculture data since 1961/62 through agriculture censuses, and livestock data since 1984 for major livestock categories. The population census has collected agriculture data mainly on information related to livestock in the recent population and housing census of 2011. This chapter attempts to link historical agriculture data with the latest population and agriculture census data, with an analysis of food self sufficiency and food balance sheet.

6.1 Background

Naturally in a country like Nepal, accurate and timely data on agriculture is very important. More recently, agricultural statistics have assumed special significance in the context of the requirements of planning and assessment as well as monitoring of agriculture and food related development programmes. In Nepal, population and housing censuses are based on guidelines issued by the United Nations for each decennial round. UN guidelines do not cover agricultural data in great detail, although they include items that can be used as a proxy for agricultural data. The agricultural data collected is limited to specific questions, in the main population and housing census questionnaire, to determine whether the household is engaged in agricultural activities. The main agricultural data items included in the population and housing census are: characteristics of households with economic activity including agriculture, number of major livestock and poultry, and gender related issues in agriculture. The major objective of this chapter is to find out the linkages between the population and agriculture over the period of fifty years.

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6.1.1 Methodology/limitation/rationale of data

The analysis of data in this chapter is based on the latest national population and housing census of 2011, the agriculture census of 2011/12 and official agriculture statistics from the Ministry of Agriculture Development up to 2012/13. Most of the agriculture data from the population census were collected through listings of households, which was conducted about a month before the actual data collection of the census. Due to this gap of one month between the two data collecting activities, there are some discrepancies among the number of households. The agriculture census of 2011/12 was conducted about six months after the population census. It should be noted that the reference period of the population census was the date of the data collection, while for the agriculture census it was for the last 12 months for most agriculture activities except the number of livestock, which was similar to that of the population census. Most of the data from the MoAD are advance estimates from extension workers in the field.

The conceptual methodologies used in the censuses have caused some discrepancies in outputs such as the number of livestock, mainly small heads, and the number of households engaged in agriculture or the number of holdings etc. Similarly there is some discrepancy between the data from the MoAD and data obtained either from the population census or the agriculture census.

6.1.2 Evolution of land use (agriculture) data

The "Total Area " of the country is divided into different uses, of which agriculture is one. The total area here does not mean the total geographical area, but the total reporting area, which is the area for which complete accounting of land use is possible. The statistics of total area are obtained from two sources, the Department of Survey, Nepal Government and the Village Records (VR)-VDC maintained by the 'Malpot' Land revenue department for revenue purposes. Area, according to VR, was estimated from village returns submitted by the patwaris or lekhpals (known by different names in different parts of the country) for revenue collection and for making crop-forecasts. The figures from these two sources do not always tally. Agricultural statistics can be categorised in to two types:

- Basic
- Current

Basic statistics: relate to agricultural holdings, their number and principal characteristics such as size, form of tenure, land utilisation, agricultural population, agricultural implements and machinery, and livestock etc. which are slow changing in nature. These data are generally collected over a long period of time. In Nepal basic agriculture statistics are obtained through decennial censuses, which were started in 1961/62 Basic land use data was collected as a result of the government's policy of revenue collection and because land tax was considered as one of the major sources of revenue. Land is also classified in to four groups based on soil texture, Abbal, Doyam, Sim, and Chahar. The details are presented in Annex I. The Department of Survey does not publish data on the basic area even when the measurement is complete.

Current statistics: include those relating to area and production of crops, livestock number and products, prices-farm gate, wholesale and retail, which are rapidly changing in nature and are more affected by economic factors as well as natural factors, like rainfall, humidity, hailstones, drought and cold waves. Generally speaking the collection of basic statistics is of cultivators, holdings and of current statistics, the field. The history of current statistics can be traced back to 1950/51 and gradually the coverage of crops and livestock has continued as institutional establishments need this data for agricultural development in addition to international agencies, in regard to financial resources allocated for this purpose.

In this regard the establishment of Krishi Adda in 1998 may have initiated the need for statistical information. The establishment of the Department of Agriculture (DoA), in 2023 after the dissolution of the Department of

Agriculture's five departments, namely the Department of Agriculture Extension, the Department of Fisheries, the Department of Horticulture, the Department of Animal Health, and the Department of Agriculture Education and Research. In B.S. 2029 all five departments were merged and the Department of Agriculture was created in the same year recognising the importance of agriculture economics. The Department of Food and Agriculture Marketing Services (DFAMS) was established to focus on current agriculture statistics collection and analysis. This department has played a leading role in the development of current agricultural statistics in Nepal. In B.S. 2036 the Department of Agriculture was divided in to two departments, namely the Department of Agriculture (DOA) and the Department of Livestock Services (DoLS). In B.S. 2049 the Department of Agricultural Development (DoAD) was created. In 2052 B.S. the DoAD was separated in to three departments namely, the DoA, the DoLS and the Central Food Research Laboratory. Now the responsibility of current agriculture statistics is under the MoAD and its departments.

6.2 Farm population

6.2.1 Agriculture land

The total land owned and operated by 5,422,045 households is about 2,525,639 hectares according to the National Sample Census of Agriculture in 2011. Man-land ratio is a very common way of expressing the population resource situation in the country. In general this ratio is considered as indicative of the pressure of the population on land resources, areas with high ratios are indicative of the higher stress of the population on land resources. The following information on population and different other indicators over the last five decades indicate that man/land ratio during 1961 was about 5.59 and reached 10.50 in 2011. At the same time farm size has decreased from 1.1 ha to 0.7 ha per agriculture holding.

Table 6.2.1(A): Agriculture holdings, population, farm size and man land ratio in Nepal (1961 to 2011).

Description	1961	1971	1981	1991	2001	2011
Agriculture holdings ('000)						
Agriculture holdings (with Land)	1,518.0	1,707.3	2,185.7	2,703.9	3,337.4	3,715.6
Agriculture holdings (With livestock and poultry only)	22.0	13.9	8.2	32.1	26.7	115.5
Total agriculture holdings	1,540.0	1,721.2	2,193.9	2,736.0	3,364.1	3,831.1
Agriculture holdings (with Land)						
Area with agriculture holdings(In'000 ha)	1,685.4	1,654.0	2,463.7	2,597.4	2,654.0	2,525.6
Population No	9,412,996	11,555,983	15,022,839	18,491,097	23,151,423	26,494,504
Man land ratio	5.59	6.99	6.10	7.12	8.72	10.50
Average farm size	1.1	1.0	1.1	1.0	0.8	0.7

Source: Highlights of Agriculture Census 2011/12, CBS

Table 6.2.1(B): Population, cultivate land and man land ratio in different regions of Nepal 1991 to 2011

Region	Population*			Cultivated land**			Man land ratio		
	1991	2001	2011	1991	2001	2011	1991	2001	2011
Nepal	18,491,097	23,151,423	26,494,504	2597.3	2653.9	2525.6	7.1	8.7	10.5
Mountain	1,443,130	1,687,859	1,781,792	176.8	218.7	213.9	8.2	7.7	8.3
Hill	8,419,889	10,251,111	11,394,007	1046.2	1038.6	986.1	8.0	9.9	11.6
Tarai	8,628,078	11,212,453	13,318,705	1374.3	1396.6	1325.6	6.3	8.0	10.0
Eastern Dev. Region	4,446,749	5,344,476	5,811,555	783.2	795.5	755.2	5.7	6.7	7.7
Central Dev. Region	6,183,955	8,031,629	9,656,985	719.7	750.2	716.9	8.6	10.7	13.5
Western Dev. Region	3,770,678	4,571,013	4,926,765	566.4	512.2	482.6	6.7	8.9	10.2
Mid-Western Dev. Region	2,410,414	3,012,975	3,546,682	324.7	370.7	353.6	7.4	8.1	10.0
Far-Western Dev. Region	1,679,301	2,191,330	2,552,517	203.3	225.4	217.4	8.3	9.7	11.7

**Source; NPHC Dataset 2011 and population monograph 2001*
*** National Sample Census of Agriculture 2011, Agriculture monograph 2001*

Among the different ecological belts of Nepal, man/land ratio is highest in Hills followed by Tarai and Mountains, except in 1991. Among development regions the man/land ratio is highest in central development region and lowest in eastern development region in each census periods from 1991 to 2001.

6.2.2 Holding

Agricultural holding is defined as an economic unit of agricultural production under single management comprising all livestock and poultry kept and all land used for agricultural production purposes. A holding is considered to be an Agricultural Unit of production if it satisfies any of the following conditions:

- Has an area under crops of at least a quarter of ropani (or four annas) or one matomuri in Hill or Mountain districts (0.01272 hectares) or at least eight dhur (0.01355 hectares) in Tarai.
- Keeps at least two heads of big heads i.e. cattle or buffalo (one head in the agriculture census 2011/12).
- Keeps at least five heads of small heads i.e. sheep or goats.
- Keeps at least 20 heads of poultry.
- Keeps any combination of livestock and poultry equivalent to 2 big headed animal units, 1 big headed animal unit is equal to 1 big headed livestock, i.e. one cattle or buffalo; 4 small headed livestock i.e. 4 sheep or 4 goats; or 10 heads of poultry, e.g. 1 cattle or buffalo and 10 chickens.

Table 6.2.2: Holdings with agriculture, livestock and poultry by ecological Belt

Ecological belt	Holding				Total holding
	Agriculture holding (With crop and livestock)	%	No agriculture holdings	%	
Mountain	327,493	90.1	36,020	9.9	363,513
Hill	1,729,717	68.3	801,590	31.7	2,531,307
Tarai	1,773,883	70.2	753,342	29.8	2,527,225
Easter Dev. Region	894,916	72.7	335,508	27.3	1,230,424
Central Dev. Region	1,153,935	58.8	807,909	41.2	1,961,844
Western Dev. Region	797,264	74.8	268,232	25.2	1,065,496
Mid-Western Dev. Region	575,099	82.8	119,677	17.2	694,776
Far-Western Dev. Region	409,879	87.3	59,626	12.7	469,505
Eastern Mountain	74,905	88.3	9,912	11.7	84,817
Eastern Hill	308,164	89.0	38,084	11.0	346,248
Eastern Tarai	511,847	64.0	287,512	36.0	799,359
Central Mountain	108,220	88.7	13,775	11.3	121,995
Central Hill	462,314	45.6	552,149	54.4	1,014,463
Central Tarai	583,401	70.7	241,985	29.3	825,386
Western Mountain	3,413	71.8	1,340	28.2	4,753
Western Hill	513,570	75.9	163,317	24.1	676,887
Western Tarai	280,281	73.0	103,575	27.0	383,856
Mid-Western Mountain	63,478	92.3	5,270	7.7	68,748
Mid-Western Hill	295,502	89.0	36,378	11.0	331,880
Mid-Western Tarai	216,119	73.5	78,029	26.5	294,148
Far-Western Mountain	77,477	93.1	5,723	6.9	83,200
Far-Western Hill	150,167	92.8	11,662	7.2	161,829
Far-Western Tarai	182,235	81.2	42,241	18.8	224,476
Total	**3,831,093**	**70.7**	**1,590,952**	**29.3**	**5,422,045**

Source; NPHC 2011 Dataset CBS

There are about 5.42 million households reported in the population census of 2011. Among them about 3.83 million (71 % of the total) are agriculture holdings with livestock and birds. The holdings are highest in Mountain (90.1%) followed by Tarai (70.2%) and Hills (68.3%). Among the development regions the highest percentage of these holding is in Far western development region (87.3%), followed by mid western, western and eastern regions. The lowest percentage lies in the central development region (58.8%). Among the eco development regions the highest proportion is again in the far western mountains (93.1%) and the lowest is in the central hills (45.6%). Details are in Annex II. Among the districts, Agri. holdings (with crop and livestock) as a percentage of total households is summarised in Table 6.2.3.

Table 6.2.3: Percentage of agri. holding (with crop and livestock) among total households

Category; % of Agri. Holding (With crop and livestock) among total households	Name of the districts	No of districts
Districts with less than 50%	Kathmandu, Lalitpur, Kaski, Bhaktapur	4
Districts with more than 50% but below national level (70.7%)	Sunsari, Morang, Parsa, Rupandehi, Banke, Jhapa, Chitawan, Manang, Dhanusa	9
Districts with more than national average but less than 80%	Mahottari, Mustang, Saptari, Sarlahi, Rautahat, Dang, Bara, Siraha, Tanahu, Surkhet, Makwanpur, Kailali, Lamjung, Nawalparasi	14
Districts with more than 80% but less than 90%	Parbat, Myagdi, Bardiya, Kapilbastu, Palpa, Udayapur, Dhankuta, Syangja, Baglung, Kavrepalanchok, Kanchanpur, Sankhuwasabha, Gorkha, Rasuwa, Dhading, Humla, Sindhupalchok,Taplejung, Terhathum, Gulmi, Sindhuli, Doti, Panchthar, Dolakha, Dolpa, Ilam	26
Districts with more than 90%	Rukum, Solukhumbu, Bajura, Darchula, Nuwakot,Dadeldhura, Jumla, Salyan, Rolpa, Dailekh, Arghakhanchi, Achham, Pyuthan, Ramechhap,Bhojpur, Kalikot, Jajarkot, Okhaldhunga, Khotang,Mugu, Bajhang, Baitadi	22
Total		**75**

Source: NPHC 2011 Dataset CBS

Among the districts the highest number of holdings are reported in Morang, followed by Jhapa, Kailali ,Rupandehi, and Nawalparasi. The lowest number of holdings are reported in Manang, Mustang, Dolpa, Humla and Rasuwa.

Table 6.2.4: Number, area and fragmentation of holdings by total area of holding

Region	Holdings					Parcels	
	Number	Area (ha)				Total	Average
		Wet	%	Dry	Total		
Nepal	3,831,093	1,584,208	62.7	941,431	2,525,639	12,096,417	3.2
Eastern Mountain	74,905	20,790	29.5	49,610	70,400	215,074	2.9
Eastern Hill	308,164	73,952	30.2	170,594	244,546	814,328	2.6
Eastern Tarai	511,847	416,619	94.6	23,613	440,232	1,258,318	2.5
Central Mountain	108,220	22,141	33.5	44,042	66,184	431,054	4.0
Central Hill	462,314	81,263	36.7	140,219	221,482	12,754,89	2.8
Central Tarai	583,401	400,471	93.3	28,724	429,195	1,780,013	3.1
Western Mountain	3,413	10	0.5	1,838	1,848	14,976	4.4
Western Hill	5,135,70	88,676	30.7	200,132	288,808	1,833,577	3.6
Western Tarai	280,281	181,657	94.7	10,235	191,891	1,008,441	3.6

(Table continues...)

(Table 6.2.4 continued...)

Region	Holdings					Parcels	
	Number	Area (ha)				Total	Average
		Wet	%	Dry	Total		
Mid Western Mountain	63,478	6,783	18.4	30,112	36,896	432,920	6.8
Mid Western Hill	295,502	38,894	23.8	124,528	163,423	935,626	3.2
Mid Western Tarai	216,119	117,133	76.4	36,172	153,305	570,555	2.6
Far Western Mountain	77,477	9,768	25.3	28,836	38,604	456,217	5.9
Far Western Hill	150,167	19,806	29.2	48,009	67,815	679,454	4.5
Far Western Tarai	182,235	106,245	95.7	4,766	111,011	390,376	2.1
Mountain	327,493	59,492	27.8	154,439	213,932	1,550,241	4.7
Hill	1,729,717	302,591	30.7	683,482	986,073	5,538,474	3.2
Tarai	1,773,883	1,222,125	92.2	103,509	1,325,635	5,007,702	2.8
Eastern	894,916	511,361	67.7	243,817	755,178	2,287,720	2.6
Central	1,153,935	503,875	70.3	212,986	716,861	3,486,556	3.0
Western	797,264	270,342	56.0	212,205	482,547	2,856,993	3.6
Mid Western	575,099	162,811	46.0	190,813	353,624	1,939,100	3.4
Far Western	409,879	135,819	62.5	81,611	217,430	1,526,048	3.7
Nepal	3,831,093	1,584,208	62.7	941,431	2,525,639	12,096,417	3.2

Source: Agriculture Census 2011/12 CBS

Even though the population census has not collected information on khet pakho, the information from the agriculture census of 2011 indicates that among the total reported agriculture land of 2.52 million hectares, 1.58 million ha. is wet (khet) and the remainder, about 1 million ha of land, is dry (pakho). Wetland is generally regarded as land where rice can be cultivated and is considered better than dry. The percentage of wetland is about 63% of the total, which is highest in far western tarai (95.6%) and lowest in western mountains (0.5%).

The total number of parcels among the 3.8 million reported holdings are more than 12 million with the average number of parcels per holding being 3.2. The highest number of parcels is reported in mid western mountains (6.8) and lowest in eastern Tarai (2.5) Table 6.2.4.

Table 6.2.5: Number, area and land use by total area of holding

Region	No. of holdings	Area (ha)	Land under temporary. crops	Area under temporary meadows	Land under temporary fallow	Total arable land
			Area (ha)	Area (ha)	Area (ha)	Area (ha)
Nepal	3,831,093	2,525,639	2,123,297	8,410	31,044	2,162,751
Eastern Mountain	74,905	70,400	52,051	209	1,092	53,352
Eastern Hill	308,164	244,546	172,929	1,064	4,197	178,190
Eastern Tarai	511,847	440,232	403,996	398	2,322	406,717
Central Mountain	108,220	66,184	57,239	379	1,434	59,052
Central Hill	462314	221482	185963	940	3723	190626
Central Tarai	583,401	429,195	394,769	1,222	2,860	398,851
Western Mountain	3,413	1,848	1,224	14	177	1,415
Western Hill	513,570	288,808	194,170	1,346	5,787	201,303
Western Tarai	280,281	191,891	176,344	383	1,097	177,824
Mid Western Mountain	63,478	36,896	30,454	614	1,736	32,804
Mid Western Hill	295,502	163,423	127,612	1,007	3,214	131,833
Mid Western Tarai	216,119	153,305	140,894	166	740	141,799
Far Western Mountain	77,477	38,604	29,407	175	831	30,412
Far Western Hill	150,167	67,815	52,757	490	1,664	54,911
Far Western Tarai	182,235	111,011	103,489	2	171	103,661
Mountain	327,493	213,932	170,375	1,391	5,270	177,035
Hill	1,729,717	986,073	733,430	4,848	18,585	756,863
Tarai	1,773,883	1,325,635	121,949	1,099,714	7,190	1,228,853
Eastern	894,916	755,178	628,976	1,672	7,612	638,259
Central	1,153,935	716,861	637,970	2,542	8,017	648,529
Western	797,264	482,547	371,738	1,742	7,062	380,542
Mid Western	575,099	353,624	298,960	1,787	5,689	306,436
Far Western	409,879	217,430	185,653	667	2,665	188,985
Nepal	3,831,093	2,525,639	2,123,297	8,410	31,044	2,162,751

Source: Agriculture Census 2011/12 CBS

6.3 Livestock

Animals are worshiped as a god/goddess in the majority of Hindu and Buddhist communities. Livestock are assets, used as emergency capital and live cash, provide nutrition (milk, meat and eggs), soil nutrients (manure, urine and decaying carcasses), energy (draught power, transportation and fuel), animal fibre (wool and hair), carcass by-products (bone, hide and skin); and are associated with religious sentiments. Almost all kinds of domesticated animals, except cameloids, are raised in Nepal. Depending on the elevation, livestock type and concentration varies from region to region. The major livestock in the lower belt are cattle, buffalo, goat, sheep, pigs and poultry and, at the higher elevation, major livestock are Yak, Chauris, cattle, sheep and mules. The average holding of livestock (cattle, buffaloes, yak/chauri, sheep, goats and pigs) per households is 5.84. However, the overall production and productivity of individual livestock are very low

mainly due to the combined effects of poor forage supply, mismanagement and poor animal health care conditions. Native breeds are smaller in body size and are low producing, but are noted for their hardiness, that they thrive in harsh environments and produce even under half-starved conditions.

6.3.1 Livestock population and distribution

Table 6.3.1: Number of different livestock by ecological belt

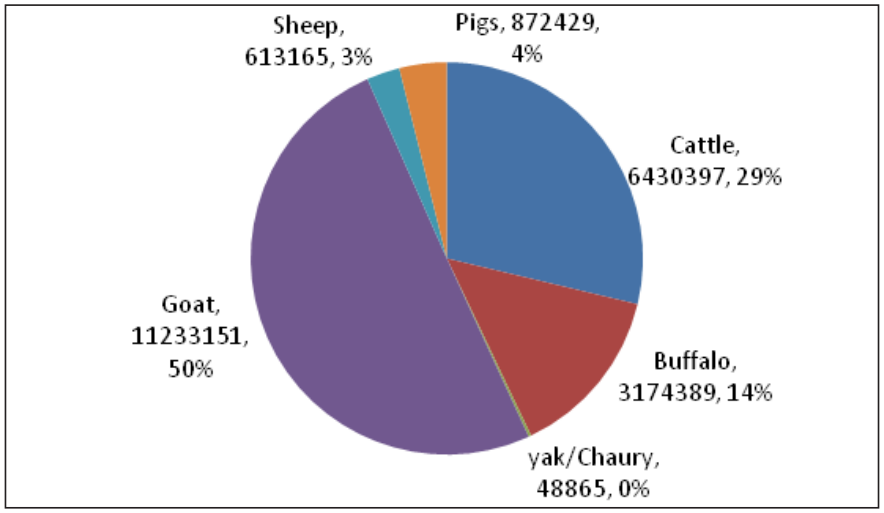
Region	Cattle	Buffalo	Yak/Chaury	Goat	Sheep	Pigs
Mountain	866,461	272,009	40,753	1,190,412	239,418	77,748
Hill	3,123,692	1,745,536	8,112	6,191,783	238,794	449,369
Tarai	2,440,244	1,156,844	.	3,850,956	134,953	345,312
Easter Dev. Region	1,890,332	560,575	13,007	2,613,679	53,049	467,417
Central Dev. Region	1,241,576	908,758	11,354	3,460,025	47,355	105,616
Western Dev. Region	895,773	932,739	10,664	2,193,405	85,710	138,418
Mid-Western Dev. Region	1,338,481	439,865	13,094	1,922,502	339,954	105,748
Far-Western Dev. Region	1,064,235	332,452	746	1,043,540	87,097	55,230
Eastern Mountain	181,257	54,201	11,679	247,834	18,469	61,570
Eastern Hill	733,714	250,182	1,328	1,216,073	22,292	239,490
Eastern Tarai	975,361	256,192	.	1,149,772	12,288	166,357
Central Mountain	149,230	111,774	9,539	471,045	12,926	8,379
Central Hill	611,226	400,165	1,815	1,770,601	23,592	66,302
Central Tarai	481,120	396,819	.	1,218,379	10,837	30,935
Western Mountain	9,557	197	5,732	33,524	5,267	370
Western Hill	595,508	712,004	4,932	1,585,481	62,004	95,787
Western Tarai	290,708	220,538	.	574,400	18,439	42,261
Mid-Western Mountain	210,613	30,820	13,057	215,787	157,048	4,188
Mid-Western Hill	782,390	247,289	37	1,148,803	120,399	43,119
Mid-Western Tarai	345,478	161,756	.	557,912	62,507	58,441
Far-Western Mountain	315,804	75,017	746	222,222	45,708	3,241
Far-Western Hill	400,854	135,896	.	470,825	10,507	4,671
Far-Western Tarai	347,577	121,539	.	350,493	30,882	47,318
Total	**6,430,397**	**3,174,389**	**48,865**	**11,233,151**	**613,165**	**872,429**

Source: NPHC 2011 Dataset, CBS

There are about 6.4 million cattle, 3.2 million buffalo, 11.2 million goats, 0.6 million sheep and 0.87 million pigs reported in the population census of 2011. Among the ecological belts the highest number of cattle, buffalo, goat and pigs are in Hills followed by Tarai, while the number of yak/chaury, as well as sheep, is highest in Mountains.

Among the development regions the cattle population is highest in eastern development region, the buffalo population is highest in western region, and the yak/chaury and sheep population is highest in mid western development region. Goats are highest in central region and pigs are again highest in eastern development region.

Chart 6.3.1: Number and percentage of livestock according to their Category



6.3.2 Livestock number per households

Livestock is reared even by landless people involved in non-agricultural activities. So, the number of households involved in livestock farming is large in Nepal and almost all farm families keep some animals.

Table 6.3.2: Per unit livestock by holdings and ecological belt

Region	Agriculture holding, 2011	Total livestock	Livestock per holding
Ecological belt			
Mountain	327,493	2,686,801	8.20
Hill	1,729,717	11,757,286	6.80
Tarai	1,773,883	7,928,309	4.47
Development Region			
Easter Dev. Region	894,916	5,598,059	6.26
Central Dev. Region	1,153,935	5,774,684	5.00
Western Dev. Region	797,264	4,256,709	5.34
Mid-Western Dev. Region	575,099	4,159,644	7.23
Far-Western Dev. Region	409,879	2,583,300	6.30
Eco-development Region			
Eastern Mountain	74,905	575,010	7.68
Eastern Hill	308,164	2,463,079	7.99

(Table continues...)

(Table 6.3.2 continued...)

Region	Agriculture holding, 2011	Total livestock	Livestock per holding
Eastern Tarai	511,847	2,559,970	5.00
Central Mountain	108,220	762,893	7.05
Central Hill	462,314	2,873,701	6.22
Central Tarai	583,401	2,138,090	3.66
Western Mountain	3,413	54,647	16.01
Western Hill	513,570	3,055,716	5.95
Western Tarai	280,281	1,146,346	4.09
Mid-Western Mountain	63,478	631,513	9.95
Mid-Western Hill	295,502	2,342,037	7.93
Mid-Western Tarai	216,119	1,186,094	5.49
Far-Western Mountain	77,477	662,738	8.55
Far-Western Hill	150,167	1,022,753	6.81
Far-Western Tarai	182,235	897,809	4.93
Total	**3,831,093**	**22,372,396**	**5.84**

Source: NPHC 2011 Dataset CBS

The national average of livestock numbers per household with agriculture holdings is about 6 except for poultry and duck that varies from region to region. The highest average is in Mountains (8.2) followed by Hills (6.8) and Tarai (4.47). Among the development regions it is highest in mid western region (7.23) followed by far western, eastern and central regions (5). Among the eco development regions it is highest in western mountains (16.01) and lowest in central Tarai (3.66). Among the districts Bhaktapur has the lowest average of 1.55 and Mustang has the highest average of 16.58. The number of districts below the national average of 5.84 is 29 and the number above the national average is 46. The details are presented in Annex III.

Table 6.3.3: Per unit livestock (category) by agriculture holding.

Region	Cow/Ox	S/He Buffalo	Yak/Nak	Goat	Sheep	Pig
Ecological belt						
Mountain	3.55	1.85	7.94	5.88	15.00	1.74
Hill	2.92	1.90	7.37	5.27	4.71	1.77
Tarai	2.53	1.93	0.00	3.53	4.22	1.90
Development Region						
Easter Dev. Region	2.86	1.88	10.05	4.25	4.73	1.76
Central Dev. Region	2.31	1.79	10.13	4.52	5.29	2.08
Western Dev. Region	2.51	2.02	12.22	4.49	7.53	1.94
Mid-Western Dev. Region	3.37	1.97	4.82	5.25	6.13	1.84
Far-Western Dev. Region	3.25	1.87	3.27	4.50	7.53	1.63
Eco-Development Region						
Eastern Mountain	3.26	2.00	10.47	4.86	5.71	1.58
Eastern Hill	3.08	1.88	7.46	5.57	4.50	1.68
Eastern Tarai	2.66	1.86	0.00	3.33	4.06	1.98
Central Mountain	2.48	1.82	11.42	5.41	7.69	2.00
Central Hill	2.55	1.89	6.35	5.73	5.74	1.97
Central Tarai	2.02	1.69	0.00	3.30	3.43	2.38
Western Mountain	4.02	3.52	22.84	28.39	18.68	3.98
Western Hill	2.55	1.96	7.93	4.65	8.21	1.81
Western Tarai	2.41	2.24	0.00	3.92	5.20	2.30
Mid-Western Mountain	3.95	1.70	4.83	9.49	18.26	6.03
Mid-Western Hill	3.41	1.81	2.47	5.52	3.78	1.93
Mid-Western Tarai	3.01	2.34	0.00	4.11	4.15	1.70
Far-Western Mountain	4.35	1.87	3.27	5.50	21.18	4.62
Far-Western Hill	3.07	1.78	0.00	4.78	4.69	2.73
Far-Western Tarai	2.79	1.99	0.00	3.77	4.31	1.50
Total	**2.82**	**1.90**	**7.84**	**4.55**	**6.22**	**1.82**

Source: NPHC 2011 Dataset, CBS

The lowest per household number by livestock category is pigs followed by buffaloes, cattle, goat, and sheep, while the highest is yak/chaury. It should be noted that the number of household raising these livestock are not mutually exclusive. The detail of the district level per household number of livestock is in Annex IV.

6.3.3 Importance of livestock

Livestock and poultry play an important role in various aspects of the life of the people as explained in the previous and following chapters. This sector is the major source of nutritious food with easily digestive protein in the form of milk, meat and egg. This is also a major source of organic fertiliser which is used in the form of manure for farm cultivation. Livestock are also used for ploughing and pottering goods in various parts of the country. Besides these benefits, livestock also play a vital role as the source of cooking fuel for households. The data obtained from the population census on the use of fuels related to livestock are detailed in Table 6.3.4.

Table 6.3.4: Households by usual type of fuel used for cooking

Area	Cow Dung	%	Bio Gas	%	Total	%
Nepal	563126.0	10.4	131596.0	2.4	694722.0	12.8
Urban/rural						
Urban	15776.0	1.5	19121.0	1.8	34897.0	3.3
Rural	547350.0	12.5	112475.0	2.6	659825.0	15.1
Ecological belt						
Mountain	1517.0	0.4	792.0	0.2	2309.0	0.6
Hill	2810.0	0.1	41147.0	1.6	43957.0	1.7
Tarai	558799.0	22.1	89657.0	3.5	648456.0	25.7
Development region						
Eastern Dev. Region	255205.0	20.7	31390.0	2.6	286595.0	23.3
Central Dev. Region	216142.0	11.0	32279.0	1.6	248421.0	12.7
Western Dev. Region	80543.0	7.6	38419.0	3.6	118962.0	11.2
Mid-Western Dev. Region	10478.0	1.5	13857.0	2.0	24335.0	3.5
Far-Western Dev. Region	758.0	0.2	15651.0	3.3	16409.0	3.5
Eco-development region						
Eastern Mountain	25.0	0.0	145.0	0.2	170.0	0.2
Eastern Hill	867.0	0.3	2860.0	0.8	3727.0	1.1
Eastern Tarai	254313.0	31.8	28385.0	3.6	282698.0	35.4
Central Mountain	5.0	0.0	390.0	0.3	395.0	0.3
Central Hill	767.0	0.1	13173.0	1.3	13940.0	1.4
Central Tarai	215370.0	26.1	18716.0	2.3	234086.0	28.4
Western Mountain	826.0	17.4	0.0	0.0	826.0	17.4
Western Hill	443.0	0.1	23568.0	3.5	24011.0	3.5
Western Tarai	79274.0	20.7	14851.0	3.9	94125.0	24.5
Mid-Western Mountain	654.0	1.0	64.0	0.1	718.0	1.0
Mid-Western Hill	547.0	0.2	1336.0	0.4	1883.0	0.6
Mid-Western Tarai	9277.0	3.2	12457.0	4.2	21734.0	7.4
Far-Western Mountain	7.0	0.0	193.0	0.2	200.0	0.2
Far-Western Hill	186.0	0.1	210.0	0.1	396.0	0.2
Far-Western Tarai	565.0	0.3	15248.0	6.8	15813.0	7.0

Source: NPHC dataset 2011, CBS

As can be seen from the table above, cow dung (which also includes buffalo dung) contributes more than 10% of the source of cooking fuel for households in its raw form and about 13% of biogas (the major source of biogas is again livestock dung). The total contribution of cow dung and biogas is more than 15% for all rural households; more than 25% in the Tarai region, and around 23% in eastern development region which has the highest use among all development regions. Among eco development regions the highest use of these fuels is in eastern Tarai (35.4%) followed by central and western Tarai.

Many Nepali farmers have been using the same livestock husbandry practices for generations without thinking systematically about labour costs and inputs, or potential economic benefits from animals, As a result of poor productivity from local animals, each year Nepal imports thousands of stronger breeds from India. Well-managed livestock can change the lives of farmers, their families, and their entire villages and district. It is dependent on higher and more stable productivity,

6.4 Activity rate

In most countries, including Nepal, population and housing censuses are based on guidelines issued by the United Nations for each decennial round. Those UN guidelines do not cover agricultural data, although they include items that can be used as a proxy for agricultural labour. The guidelines in the ***2010 World Programme on Population and Housing Censuses*** (UNSD, 2008), recommends collection of the following items on labour, based on International Labour Organization (ILO) recommendations; main occupation, industry of main occupation and employment status in main occupation. The data are collected for each economically active person, defined in terms of either current status or usual status. The current status is based on the activity status of individuals over a short reference period, such as seven days and the usual status is based on the activity status of individuals, based on their main activity over a longer reference period, such as a year.

Status in employment of main job refers to whether the person is an employee, own-account worker, etc. Individual responses about occupation and industry can be analysed alongside status in employment to classify agricultural workers broadly as farmers or agricultural employees. It can also be used as a proxy to identify farm households. A household in which any member has both an agricultural main activity and a status of "own account worker" would be classified as a farm household. The activity rate in the population census of 2011 was collected through the following questions administered in lagat 2, which is based on sampling. The data presented here are the estimates through cross tabulation and weighting with lagat 1.

6.4.1 Agriculture as a main occupation and industry

Economically active populations are generally classified within a certain age group with specific characteristics. In Nepal, the population of more than 10 years and above is classified as economically active and questions were asked to them about their main occupation as well as industry. The details are in Table 6.4.1.

Table 6.4.1: Usually active population aged 10 years and over by major occupation and sex

Occupation	Total		Male		Female	
	Number	%	Number	%	Number	%
Armed Forces	24,156	0.2	22,331	0.4	1,826	0.0
Managers	140,262	1.4	92,834	1.6	47,428	1.1
Professionals	396,582	4.0	262,589	4.6	133,992	3.1
Technicians and associate Prof.	207,388	2.1	160,609	2.8	46,779	1.1
Office assistance	126,523	1.3	89,266	1.6	37,257	0.9
Service & sale workers	823,506	8.3	572,768	10.1	250,737	5.9
Skilled agri.,forestry & fishery workers	6,000,478	60.4	2,856,516	50.5	3,143,963	73.6
Craft and related trades workers	801,352	8.1	640,197	11.3	161,155	3.8
Plant & machine operators & assemblers	220,129	2.2	204,403	3.6	15,726	0.4
Elementary Occupations	987,487	9.9	613,581	10.8	373,905	8.7
Not Stated	201,699	2.0	140,933	2.5	60,766	1.4
Total	9,929,562	100	5,656,027	100.0	4,273,535	100.0

Source: Derived from NPHC 2011, CBS Dataset

Still more than 60% of the population's main occupation is agriculture and related activities, which signifies subsistence agriculture. There is a vast difference between males and female whose engagement rate in agriculture is about 51% and 74% respectiviely. Table 6.4.2. significantly specifies that around 90% of these people are own account holders.

Table 6.4.2: Status of employment in skilled agriculture forestry and fishery by sex

Status of Employment	Total		Male		Female	
	Number	%	Number	%	Number	%
Employer	108,782	1.8	61,732	2.2	47,050	1.5
Employee	265,020	4.4	157,303	5.5	107,717	3.4
Own account holder	5,375,101	89.6	2,535,830	88.8	2,839,271	90.3
Unpaid family worker	88,724	1.5	28,264	1.0	60,460	1.9
Not stated	162,851	2.7	73,387	2.6	89,464	2.8
Total	**6,000,478**	**100**	**2,856,516**	**100**	**3,143,962**	**100**

Source: Derived from NPHC 2011, CBS Dataset

Table 6.4.3: Agriculture (skilled agriculture forestry and fishery) in different occupational and industry

Category	Agriculture as a main occupation		Agriculture as a main Industry	
Sex	Number	%	Number	%
Male	2,856,516	50.5	3,081,814	54.5
Female	3,143,963	73.6	3,273,921	76.6
Urban	303,311	20.1	328,244	21.8
Rural	5,697,167	67.6	6,027,491	71.6
Belt				
Mountain	619,432	79.8	621,084	80.1
Hill	2,851,215	62.2	2,866,610	62.6
Tarai	2,529,831	55.3	2,868,041	62.7
Region				
Eastern Development Region	1,417,390	62.0	1,493,778	65.4
Central Development Region	1,697,227	48.9	1,867,500	53.9
Western Development Region	1,232,623	65.0	1,292,820	68.1
Mid Western Development Region	943,317	71.2	972,936	73.4
Far Western Development Region	709,921	74.4	728,701	76.3
Total	**6,000,478**	**60.4**	**6,355,735**	**64.0**

Source; Derived from NPHC 2011, CBS Dataset

The occupation, skilled agriculture forestry and fishery, was further analysed in the table above, which reveals that agriculture is the mainstay of about 68% of the rural population while it is less preferred in urban settings.

According to development regions; about three fourths of the economically active population 10 years and over from far western development region are engaged in agriculture, while its less than 50% in central development region. Eastern and Western region are almost equal, while mid western development region comes in second position with 71% of its population engaged in agriculture, fishery and forestry.

Similarly agriculture, forestry and fishing is the major industry of the economically active people 10 years and over. About 77% of females, 55% of males and 64% of the total are engaged in the agriculture sector. Eighty percent of the people in the mountain are engaged in agriculture. More females are engaged in this sector than males. Among development regions the highest percentage is in far west while the lowest is in central development region.

6.4.2: Educational status of agriculture households

Education is considered as a major requirement for the development of any country and illiteracy is considered as a hindrance to the development process. In Nepal, illiteracy is considered as the inability to read, write and perform simple calculations in any language for day-to-day activities. In the national sample census of agriculture the educational status for the head of the agriculture household was reported and the summary of findings is presented in table 6.4.4. Among heads of agriculture holdings 31.7 % of males and 44.4% of females are still illiterate. Details are shown in Table 6.4.4.

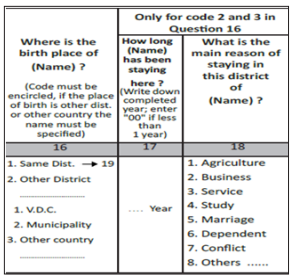
Table 6.4.4: Educational status of agriculture holder

Region	Total		Under SLC		SLC		Above SLC		Literate (non-formal education)		Illiterate	
	Male	Female	M	F	M	F	M	F	M	F	M	F
Eastern Mountain	59,661	15,244	34.8	22.1	5.6	2.0	3.6	1.0	31.2	28.7	24.8	46.3
Eastern Hill	259,228	48,936	35.2	21.1	6.5	2.8	3.6	1.7	30.1	26.7	24.6	47.6
Eastern Tarai	446,328	65,519	31.2	23.8	9.0	5.2	6.6	2.6	23.2	24.5	29.9	43.9
Central Mountain	78,191	30,029	26.7	17.9	2.7	1.6	2.2	1.7	37.6	32.0	30.7	46.7
Central Hill	367,289	95,025	29.8	17.9	5.3	3.0	5.2	2.4	27.1	27.5	32.5	49.2
Central Tarai	530,629	52,772	26.3	24.7	5.7	4.8	5.3	2.9	17.7	18.9	45.1	48.6
Western Mountain	2,388	1,025	25.4	15.5	4.7	2.6	3.2	2.1	40.8	33.8	25.8	45.9
Western Hill	331,492	182,078	35.9	28.5	5.6	2.9	4.6	1.6	31.0	30.5	23.1	36.5
Western Tarai	225,102	55,179	39.8	30.7	3.5	3.6	4.9	1.7	18.4	25.7	33.5	38.4
Mid Western Mountain	55,325	8,153	23.3	6.4	4.9	1.6	4.6	1.1	28.4	29.4	38.8	61.4
Mid Western Hill	244,214	51,288	34.8	19.8	3.5	1.5	4.1	1.2	25.8	26.0	31.8	51.6
Mid Western Tarai	174,652	41,467	38.9	28.2	4.8	2.6	4.5	1.7	22.3	29.9	29.5	37.5
Far Western Mountain	67,156	10,321	37.6	8.3	3.6	1.5	6.6	1.5	26.9	29.0	25.3	59.6
Far Western Hill	116,768	33,399	35.4	9.0	3.4	0.9	5.0	1.0	30.8	34.6	25.4	54.6
Far Western Tarai	145,914	36,321	40.5	21.6	4.4	1.7	5.9	2.5	22.2	26.6	27.1	47.6
Mountain	262,721	64,772	30.6	15.9	4.1	1.7	4.2	1.5	31.5	30.5	29.6	50.5
Hill	1,318,992	410,725	33.8	22.5	5.1	2.6	4.5	1.7	28.8	29.1	27.8	44.1
Tarai	1,522,625	251,258	32.5	25.9	6.1	3.8	5.6	2.3	20.3	24.8	35.4	43.2
Eastern	765,216	129,700	32.9	22.6	7.9	3.9	5.4	2.1	26.1	25.8	27.7	45.6
Central	976,109	177,826	27.7	19.9	5.3	3.3	5.0	2.4	22.8	25.7	39.2	48.6
Western	558,982	238,282	37.4	29.0	4.7	3.1	4.7	1.6	25.9	29.4	27.3	37.0
Mid Western	474,192	100,907	35.0	22.2	4.1	2.0	4.3	1.4	24.8	27.9	31.8	46.6
Far Western	329,839	80,040	38.1	14.6	3.9	1.4	5.7	1.7	26.2	30.2	26.1	52.1
Nepal	3,104,338	726,755	32.9	23.1	5.5	2.9	5.0	1.9	24.9	27.7	31.7	44.4

Source: Derived from Agriculture Census 2011/12, CBS

6.4.3: Population movement for agriculture purpose

Migration is considered as a social process induced by economic and various other reasons. In Nepal migration is considered as a major reason behind the distribution and movement of the population. In the census of 2011 the reason for agriculture purposes was also recorded in the topic under question number 18 of schedule 2. The results indicate that about 15% of population movement is mainly for agriculture purposes. There is a gap between males 20% and females 11%. In urban areas this figure is about 5% whereas in rural area it is 21%. Among the ecological belts the highest percentage of movement for agriculture purposes is in the Tarai (24%) while the lowest is in hills and mountains, both at only 5%.



Where is the birth place of (Name) ? (Code must be encircled, if the place of birth is other dist. or other country the name must be specified)	Only for code 2 and 3 in Question 16	
	How long (Name) has been staying here ? (Write down completed year; enter "00" if less than 1 year)	What is the main reason of staying in this district of (Name) ?
16	17	18
1. Same Dist. → 19 2. Other District ..... 1. V.D.C. 2. Municipality 3. Other country	..... Year	1. Agriculture 2. Business 3. Service 4. Study 5. Marriage 6. Dependent 7. Conflict 8. Others .....

Table 6.4.5: Population movement for agricultural purpose

Area and sex		Total No	Main reason for stay	
			Agriculture No	% of Total
Nepal				
	Total	3,788,070	564,516	15
	Male	1,612,927	316,561	20
	Female	2,175,143	247,955	11
Urban/Rural				
	Urban	1,429,649	67,972	5
	Rural	2,358,421	496,544	21
Ecological Belt				
	Mountain	60,459	2,943	5
	Hill	1,773,771	88,607	5
	Tarai	1,953,840	472,967	24
Development Region				
	Eastern Dev. Region	772,121	174,160	23
	Central Dev. Region	1,674,237	120,040	7
	Western Dev. Region	658,063	101,284	15
	Mid-Western Dev. Region	338,436	67,620	20
	Far-Western Dev. Region	345,214	101,412	29

Source: Derived from Population Census 2011/12, CBS

Among the development regions the highest proportion of movement is in far western development region (29%) followed by eastern, mid western, and western, while the lowest is in central development region (7%)

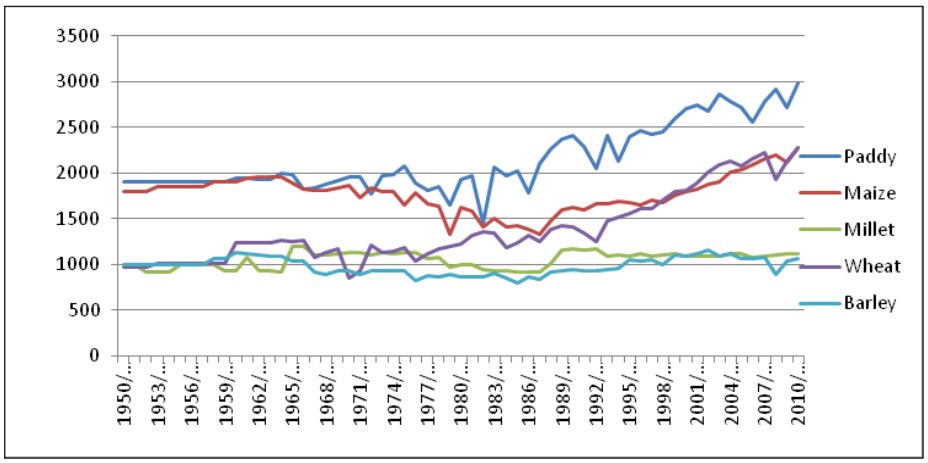
6.5 Production trend of different crops focused on cereals

6.5.1 Production and productivity

Although world programmes on population and housing censuses have recommended collecting crop production data through censuses, in Nepal, these data are not yet available through the population or agriculture censuses. The agriculture census of 2011/12 collected the production data of some selected crops but it is not yet published.

The country is relying on current agriculture statistics released by the Ministry of Agriculture Development. The detailed data for the last 60 years is presented in Annex V. Productivity of different crops is measured by the yield rate i.e. production in per hectare area of land. The data from the Ministry of Agriculture Development shows some trends on productivity of major crops (paddy, maize, millet, wheat and barley) for the last 60 years.

Chart 6.5.1: Productivity (kg per hectare) of different cereal crops over the years



6.5.2 Per capita production

Table 6.5.1: Per capita production of cereals, meat and milk in various census periods

Census Year	Total Population*	Total Cereals Production		Meat				Milk	
		Total Cereal Mt	Per capita Kg	Goat Mt	Per capita Kg	Other Meat Mt	Per capita Kg	Total Production	Per capita Kg
1971	11,555,983	3,303,000	286	NA	NA	NA	NA	NA	NA
1981	15,022,839	3,349,720	223	NA	NA	NA	NA	NA	NA
1991	18,491,097	4,904,760	265	32,888	1.78	115,807	6.26	871,234	47.12
2001	23,151,423	7,360,403	318	41,407	1.79	157,488	6.80	1,622,751	70.09
2011	26,494,504	9,142,693	345	56,676	2.14	231,254	8.73	1,622,751	61.25

Note Production data are of the fiscal year like-1991/92, 2001/02 and 2011/12

*Source: * From CBS others from MoAD*

The total cereal production for the population is analysed for the period from 1971 to 2011, while meat and milk production is analysed for the last two decades only due to non-availability of data. Per capita production of cereals has increased from 286 to 345 kg per year, although this has not been consistent over the years. Milk production has increased from 47 kg to 61 kg and meat production from 8 to 11 kg per person per year in the last two decades.

6.5.3 Food security

The concept of food security meets the following conditions: food is available at all times; all persons have a means of access to food; food is nutritionally adequate in terms of quantity, quality and variety; and it is acceptable within the given culture. Only when all these conditions are in place can a population be considered 'food secure'.

Food security is defined as:

"Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life." - ***World Food Summit (October 1996*****).**

The focus of food security is on four key dimensions (availability, access, utilisation and stability), known as the four pillars of food security.

Food availability is the physical presence of food in an area through all forms of domestic production, commercial imports and food aid. Food availability in an area is determined by considering production, trade, stocks and transfers.

Food access is the ability of a household to acquire adequate amounts of food. Food may be available in the market in sufficient quantity and diversity, but this may not necessarily be accessible by people with low income and/or low purchasing power. Food access of an individual household is determined by considering food production and stocks, purchases, barter, gifts, borrowing and food aid.

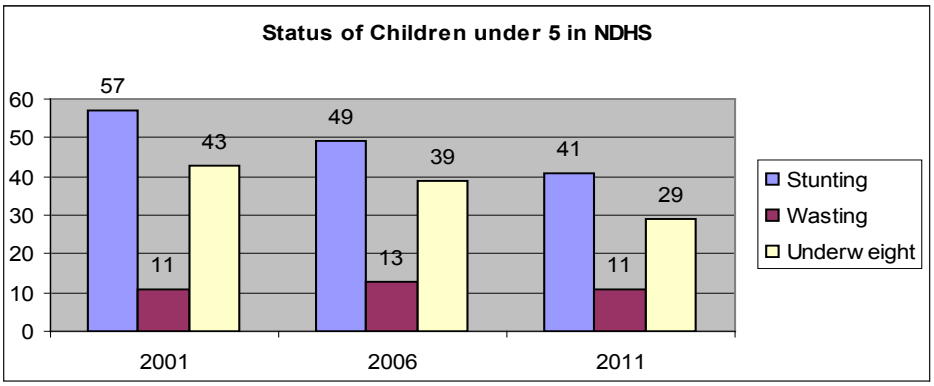
Food utilisation refers to the proper use of food. This considers food storage, processing and preparation methods, including the water and cooking fuel used, and hygiene conditions maintained during preparation and consumption. Food utilisation also includes the conversion of diet into nutrition and its use in the physical functioning of the body. Individual food requirements generally remain different as the food requirements of children, pregnant women and elderly within the household are not the same as those of healthy adults. Therefore this also takes in to account use of food by individuals in the household according to their nutritional need.

Stability can be achieved once availability, access and utilisation of food are ensured at all times and without significant fluctuations in the situation. Stability is about the sustainability of the satisfactory achievement of conditions related to all three aspects of food security as discussed above.

6.5.3.1 Utilisation

The utilisation pillar of food security is generally measured by the level of nutrition or malnutrition like stunting, wasting and being underweight. The following figure shows weak utilisation patterns in Nepal. The data are from three Nepal Demographic and Health Surveys NDHS undertaken by the Department of Health Services.

Chart 6.5.2: Nutritional Status of under 5 children in NDHS



Source: NDHS Report 2011, MoHP

6.5.4 Food balance sheet

Food balance sheets (FBS) provide a comprehensive picture of the pattern of a country's food supply and demand (usage) in aggregate terms during a specified reference period, calculated from the annual production of food, changes in stocks, imports and exports, and distribution of food over various uses within the country. The results can be used to monitor trends over time within an individual country. Supply utilisation accounts (SUA) are similar balances in quantity terms of individual commodities or groups of commodities data dealing with statistics on supply (production, imports and stock changes) and utilisation (exports, seed, feed, waste, industrial use, food, and other uses) which are presented together to allow the matching of food availability with food use. The concept of dynamic food balances, in particular, dynamic cereal balance sheets (DCBS) is emerging globally. DCBS are a useful tool to view current food situations linking to up-to-date changes overtime in various elements of the FBS. Of particular importance are the changes in availability (production, revised production estimates, stocks/inventories, import requirements/import arrivals, periodic import arrivals/cancellations/delays), and other utilisation/distribution factors including, population dynamics, consumption requirements/revisions, foregone consumption (undernourishment), etc. These elements can be reduced to as detailed level as necessary for effective policy actions. Table 6.5.4. presents the latest food balance sheet of Nepal. Details are in Annex V to VII.

Table 6.5.4: Summary of food balance sheet of Nepal 2012/13

Food Commodities	Food/ person/yr	Food/ pr/day	Nutrients Per Capita Per Day in Grams					
	Kg	gm	KCalo-rie	Protein (gm)	Fat (gm)	Carbo-hydrate	Miner-als	Fibre
Total	574.00	1572.60	3,068.69	85.58	36.16	590.21	**19.40**	**13.56**
Plant sources	502.25	1,376.03	2,883.49	71.95	24.55	572.73	16.79	13.56
Plant sources (%)	87.50	87.50	93.96	84.08	67.88	97.04	86.57	100.00
Animal source	71.75	196.57	185.20	13.63	11.61	17.48	2.61	0.00
Animal source (%)	12.50	12.50	6.04	15.92	32.12	2.96	13.43	0.00
Total of Cereals	**227.35**	**622.88**	**2,176.39**	**52.45**	**14.80**	**436.24**	**9.49**	**6.09**

Source: MoAD 2013

The table shows that per capita total food availability in the country in 2013 is 574 kg per year (1572 gm per day) of which 227 kg comes from cereal crops; more than 3000 kilo calories per day, about 86 gm of protein, 36 gm of fat, 19 gm of minerals and 14 gm of fibre. It should be noted that 87% to 100% of these components come from plant sources and the remainder from animal sources, except for fat and protein.

6.6 Major challenges and way forward

Agriculture statistics in Nepal are facing several challenges, threatening their reliability and sustainability. The two major institutions, the Central Bureau of Statistics and the Ministry of Agriculture Development, produce basic and current agriculture statistics respectively but this is not a priority for them. Major data items included are still focused on traditional data like area, production and productivity. The physical and economic environment in which agricultural activities are undertaken is changing rapidly and becoming complex. Major challenges for agriculture in the country are to raise and sustain agricultural growth; ensure food and nutrition security; face the challenges of climate change; adjust to changes in energy scenario; maintain bio-safety and bio-security;

ensure sustainable use of natural resources; and protect bio-diversity. New opportunities lie in trade, marketing, biotechnology, shifting demand preferences in domestic and global markets, technology sharing, resource sharing and investments in research, extension and infrastructure. This necessitates preparedness to formulate the data of these emerging items through different surveys and censuses and to increase the reliability of existing data sources. For this, institutions involved in this process need to work in a coordinated manner.

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Annex I: Classification of land (Grading)

According to Land (survey and measurement) Act 1963, while surveying and measuring lands, the prescribed authority shall determine the grade of lands in the region in the following manner:

(i) Dhanahar or irrigated lands in the Tarai Region: *(a) Abal (b) Doyam (c) Sim, and (d) Chahar*
(ii) Bhit or non-irrigated lands in the Tarai Region*: (a) Abal (b) Doyam (c) Sim, and (d) Chahar*
(iii) Khet or rice lands in Other Regions: (a) *Abal (b) Doyam (c) Sim, and (d) Chahar*
(iv) Pakho or non-irrigated lands in other Regions: (a) *Abal (b) Doyam (c) Sim, and (d) Bhith or Chahar (e) Fifth grade* (altitudes of above 8,000 ft)

The eighth amendment of Land (survey and measurement) Act 1963 in 2001 and Land (survey and measurement) Rules 2002 has improved the grading system of land. The grading is based on the land use and classified in two areas as:

(a) Agricultural Area
(b) Commercial and Residential Area

Ranking in the Agricultural Area: Land is ranked according to indicators. Each indicator has different full marks for ranking and the total full mark is 50. The indicators are provisionally: (1) irrigation facility (2) Road access (3) Crops (4) Soil type (5) Altitude from the mean sea level (6) Agricultural market facility (7) Landscape.

Agricultural land is graded as follows:
– 1 Class A ---------- 46 marks to 50 marks
– 1 Class B ----------36 marks to 45 marks
– 1 Class C ----------26 marks to 35 marks
– 1 Class D --------- 16 marks to 25 marks
– 1 Class E ----------1 mark to 15 marks

Ranking of Commercial and Residential Areas: Land is ranked according to indicators. Each indicator has different marks for ranking and the total full mark is 50. The indicators are provisionally: (1) Access to road (e.g. main road, subsidiary road etc.) (2) Water facility (3) Electricity facility (4) Location (5) Transportation (6) Communication (7) Sewerage (8) Temporary settlement.

Commercial and Residential land is graded as follows:
– 2 Class A ---------- 41 marks to 50 marks
– 2 Class B ----------31 marks to 40 marks
– 2 Class C ----------21 marks to 30 marks
– 2 Class D --------- 11 marks to 20 marks
– 2 Class E ---------- 1 mark to 10 marks

Annex II: Agriculture holdings and non agriculture holdings by district

Districts from lowest to highest	Total Agri. holdings	Agri. holding with land (having or not having livestock/ bird	Agri. holding without land (agri. holding from livestock/ bird)	No Agri. holding	Total holdings
Manang	993	990	3	446	1,439
Mustang	2,420	2,362	58	894	3,314
Dolpa	6,696	6,603	93	774	7,470
Humla	8,306	8,267	39	1,108	9,414
Rasuwa	8,504	8,370	134	1,246	9,750
Mugu	9,174	9,120	54	408	9,582
Jumla	17,774	17,571	203	1,523	19,297
Terhathum	19,608	19,274	334	2,464	22,072
Solukhumbu	21,478	21,275	203	2,276	23,754
Kalikot	21,528	21,130	398	1,457	22,985
Darchula	22,420	21,995	425	2,174	24,594
Myagdi	22,480	21,924	556	5,234	27,714
Bajura	22,611	21,727	884	2,241	24,852
Taplejung	23,444	23,019	425	3,015	26,459
Dadeldhura	24,797	24,289	508	2,214	27,011
Jajarkot	28,546	28,058	488	1,887	30,433
Parbat	28,644	27,827	817	7,018	35,662
Sankhuwasabha	29,983	29,039	944	4,621	34,604
Okhaldhunga	30,451	30,234	217	1,993	32,444
Bhaktapur	30,631	30,040	591	37,934	68,565
Dhankuta	31,382	30,736	646	6,223	37,605
Bajhang	32,446	31,671	775	1,308	33,754
Lamjung	33,041	32,030	1,011	8,989	42,030
Lalitpur	33,616	32,769	847	75,852	109,468
Panchthar	36,664	36,172	492	4,465	41,129
Bhojpur	36,832	36,401	431	2,573	39,405
Doti	36,840	35,170	1,670	4,524	41,364
Rukum	37,759	37,239	520	4,061	41,820
Rolpa	40,284	40,006	278	3,438	43,722
Khotang	40,358	39,801	557	2,303	42,661
Dolakha	40,718	40,050	668	4,923	45,641
Ramechhap	40,888	40,307	581	2,983	43,871
Salyan	42,840	41,764	1,076	3,665	46,505
Arghakhanchi	43,422	42,885	537	3,411	46,833
Baitadi	43,544	42,476	1,068	1,610	45,154

Districts from lowest to highest	Total Agri. holdings	Agri. holding with land (having or not having livestock/ bird	Agri. holding without land (agri. holding from livestock/ bird)	No Agri. holding	Total holdings
Pyuthan	44,423	43,973	450	3,270	47,693
Achham	44,986	43,953	1,033	3,314	48,300
Dailekh	45,079	44,204	875	3,818	48,897
Palpa	48,830	47,842	988	10,438	59,268
Sindhuli	51,233	50,033	1,200	6,299	57,532
Kathmandu	51,462	49,148	2,314	383,956	435,418
Baglung	51,663	50,733	930	9,802	61,465
Kaski	53,268	49,889	3,379	72,215	125,483
Nuwakot	53,984	53,119	865	5,169	59,153
Udayapur	54,919	52,760	2,159	11,549	66,468
Surkhet	56,571	54,852	1,719	16,239	72,810
Syangja	57,613	56,618	995	11,252	68,865
Gorkha	57,671	56,743	928	8,745	66,416
Gulmi	57,705	56,726	979	7,177	64,882
Ilam	57,950	56,329	1,621	6,514	64,464
Sindhupalchok	58,998	58,164	834	7,606	66,604
Tanahu	59,233	57,185	2,048	19,036	78,269
Parsa	59,496	54,440	5,056	36,022	95,518
Banke	61,433	57,575	3,858	33,255	94,688
Dhading	64,517	63,359	1,158	9,297	73,814
Makwanpur	67,111	65,467	1,644	18,918	86,029
Bardiya	68,063	62,001	6,062	15,071	83,134
Kavrepalanchok	68,872	67,690	1,182	11,741	80,613
Kanchanpur	70,573	66,743	3,830	11,542	82,115
Kapilbastu	74,770	71,129	3,641	16,496	91,266
Rautahat	79,233	71,670	7,563	27,407	106,640
Mahottari	80,844	67,825	13,019	30,467	111,311
Bara	81,292	75,288	6,004	27,272	108,564
Dang	86,623	81,069	5,554	29,703	116,326
Sunsari	86,650	67,760	18,890	75,600	162,250
Chitawan	88,242	84,088	4,154	44,089	132,331
Siraha	88,527	78,428	10,099	29,395	117,922
Saptari	89,241	76,577	12,664	31,789	121,030
Dhanusa	96,006	82,893	13,113	42,220	138,226
Sarlahi	98,288	84,716	13,572	34,508	132,796
Nawalparasi	101,337	96,954	4,383	27,411	128,748
Rupandehi	104,174	100,446	3,728	59,668	163,842
Kailali	111,662	102,198	9,464	30,699	142,361
Jhapa	120,538	100,635	19,903	63,779	184,317
Morang	126,891	102,104	24,787	86,949	213,840

Source; Derived from NPHC 2011 dataset CBS

Annex III: Per unit livestock by holdings and ecological belt

District	Agriculture holding	Total livestock	Livestock per holding
Bhaktapur	30631	47541	1.55
Kathmandu	51462	101965	1.98
Lalitpur	33616	87894	2.61
Dhanusa	96006	293092	3.05
Parsa	59496	184469	3.10
Rautahat	79233	268662	3.39
Bara	81292	279452	3.44
Siraha	88527	317385	3.59
Mahottari	80844	291392	3.60
Rupandehi	104174	375649	3.61
Kapilbastu	74770	274851	3.68
Kaski	53268	211114	3.96
Sarlahi	98288	413572	4.21
Parbat	28644	121854	4.25
Banke	61433	267919	4.36
Baglung	51663	232340	4.50
Chitawan	88242	407451	4.62
Saptari	89241	421443	4.72
Kanchanpur	70573	341639	4.84
Myagdi	22480	109464	4.87
Nawalparasi	101337	495846	4.89
Bardiya	68063	336212	4.94
Kailali	111662	556170	4.98
Gulmi	57705	299743	5.19
Sunsari	86650	456504	5.27
Jhapa	120538	653159	5.42
Morang	126891	711479	5.61
Syangja	57613	323205	5.61
Arghakhanchi	43422	246293	5.67
Total	3831093	22372396	5.84
Achham	44986	270027	6.00
Ilam	57950	356446	6.15
Kavrepalanchok	68872	428053	6.22
Solukhumbu	21478	138767	6.46
Rasuwa	8504	56485	6.64
Nuwakot	53984	361158	6.69
Dang	86623	581963	6.72
Lamjung	33041	222677	6.74

District	Agriculture Holding	Total Livestock	Livestock per Holding
Sindhupalchok	58998	401317	6.80
Doti	36840	253845	6.89
Baitadi	43544	301491	6.92
Pyuthan	44423	313032	7.05
Panchthar	36664	260665	7.11
Dailekh	45079	320714	7.11
Rukum	37759	270109	7.15
Surkhet	56571	417849	7.39
Dolakha	40718	305091	7.49
Kalikot	21528	161738	7.51
Taplejung	23444	178593	7.62
Makwanpur	67111	513597	7.65
Gorkha	57671	445804	7.73
Tanahu	59233	460306	7.77
Palpa	48830	382916	7.84
Dadeldhura	24797	197390	7.96
Ramechhap	40888	330141	8.07
Bajhang	32446	262676	8.10
Dhading	64517	526499	8.16
Khotang	40358	336015	8.33
Okhaldhunga	30451	254678	8.36
Bhojpur	36832	315154	8.56
Terhathum	19608	168070	8.57
Sankhuwasabha	29983	257650	8.59
Udayapur	54919	474175	8.63
Bajura	22611	198588	8.78
Salyan	42840	381929	8.92
Darchula	22420	201474	8.99
Jajarkot	28546	262301	9.19
Sindhuli	51233	476853	9.31
Rolpa	40284	376103	9.34
Dhankuta	31382	297876	9.49
Jumla	17774	191195	10.76
Mugu	9174	104643	11.41
Dolpa	6696	76940	11.49
Humla	8306	96997	11.68
Manang	993	14517	14.62
Mustang	2420	40130	16.58

Source: derived from Census dataset CBS

Annex IV: Per unit livestock by districts

Districts	Cow/Ox	S/He Buffalo	Yak/Nak	Goat	Sheep	Pig
Parbat	1.60	1.73	0.00	3.33	5.93	2.59
Bhaktapur	1.62	1.43	0.00	3.63	3.48	6.60
Kathmandu	1.68	1.57	0.00	4.39	4.14	8.07
Lalitpur	1.86	2.42	0.00	5.09	5.15	4.75
Dhanusa	1.86	1.56	0.00	2.70	3.26	2.63
Mahottari	1.88	1.57	0.00	3.00	2.92	2.31
Rautahat	1.88	1.58	0.00	3.01	2.44	2.20
Kaski	1.98	2.03	36.13	4.51	11.46	4.73
Kavrepalanchok	2.00	1.84	0.00	5.15	5.19	2.22
Syangja	2.03	1.97	0.00	4.28	5.52	1.59
Sarlahi	2.05	1.72	0.00	3.37	3.51	2.30
Siraha	2.06	1.54	0.00	2.79	3.77	2.70
Bara	2.11	1.68	0.00	3.27	2.84	2.35
Baglung	2.20	1.94	0.00	3.22	9.80	1.81
Parsa	2.20	1.78	0.00	3.25	2.79	3.23
Rupandehi	2.21	2.26	0.00	3.48	5.21	2.40
Nuwakot	2.28	1.88	4.25	5.43	7.63	2.41
Gulmi	2.31	2.02	0.00	3.42	5.23	1.69
Sindhupalchok	2.34	1.78	10.54	5.27	7.65	2.02
Kapilbastu	2.36	2.49	0.00	3.54	5.95	2.41
Bardiya	2.44	2.27	0.00	3.58	4.03	1.48
Ramechhap	2.44	1.83	16.82	5.50	5.34	1.60
Chitawan	2.47	1.93	0.00	4.38	4.78	2.30
Dolakha	2.49	1.82	17.31	5.53	4.94	1.88
Lamjung	2.53	2.12	0.00	5.31	7.12	1.93
Achham	2.56	1.66	0.00	5.32	5.76	2.98
Saptari	2.59	1.74	0.00	3.10	4.50	3.33
Arghakhanchi	2.60	1.90	0.00	3.86	6.48	1.94
Panchthar	2.61	1.57	6.73	4.66	3.71	1.70
Banke	2.67	2.48	0.00	3.87	4.03	2.07
Dhading	2.67	1.89	2.53	5.95	6.48	1.85
Jhapa	2.69	2.09	0.00	3.35	3.05	2.04
Nawalparasi	2.71	2.07	0.00	4.50	4.85	2.26
Kailali	2.77	1.99	0.00	4.18	4.34	1.49

Districts	Cow/Ox	S/He Buffalo	Yak/Nak	Goat	Sheep	Pig
Morang	2.80	1.96	0.00	3.67	3.34	1.89
Kanchanpur	2.83	2.00	0.00	3.12	4.20	1.51
Makwanpur	2.85	1.80	0.00	6.89	5.52	2.04
Terhathum	2.87	1.67	0.00	5.38	4.67	1.80
Gorkha	2.94	1.95	7.61	5.68	8.17	1.55
Dailekh	2.94	1.62	0.00	5.42	7.15	2.22
Khotang	2.95	1.89	10.94	5.84	4.03	1.46
Baitadi	2.97	1.86	0.00	3.80	3.95	3.47
Myagdi	2.98	1.99	3.43	4.33	27.29	2.90
Ilam	2.99	1.76	3.26	4.65	3.60	1.67
Sunsari	3.00	2.16	0.00	3.47	5.82	1.91
Taplejung	3.03	1.88	10.70	4.28	4.47	1.61
Palpa	3.04	1.98	0.00	5.73	5.48	1.75
Pyuthan	3.05	1.92	0.00	4.79	4.43	1.93
Okhaldhunga	3.10	2.23	8.48	5.41	5.98	1.55
Rukum	3.11	1.92	2.47	4.39	5.02	2.49
Tanahu	3.18	1.96	0.00	6.03	6.43	1.90
Surkhet	3.25	1.72	0.00	5.75	2.71	1.71
Dhankuta	3.28	1.71	0.00	6.46	5.61	1.89
Bhojpur	3.28	1.88	10.60	5.74	4.92	1.74
Solukhumbu	3.35	2.15	10.14	4.65	6.70	1.42
Sankhuwasabha	3.36	1.95	11.14	5.39	6.42	1.62
Doti	3.38	1.71	0.00	5.01	4.63	2.36
Udayapur	3.42	1.94	0.00	6.19	5.00	1.61
Rasuwa	3.43	2.06	8.53	6.05	13.56	4.19
Dang	3.52	2.29	0.00	4.67	4.27	1.74
Salyan	3.54	1.71	0.00	5.69	2.38	1.94
Kalikot	3.54	1.70	2.53	6.79	18.67	4.39
Sindhuli	3.54	2.05	0.00	6.37	6.17	1.61
Dadeldhura	3.66	1.88	0.00	5.61	3.61	2.42
Dolpa	3.76	1.87	6.29	12.51	11.35	7.97
Mustang	3.82	2.92	24.49	35.15	22.31	6.31
Jajarkot	3.92	1.78	0.00	7.68	5.11	5.03
Humla	3.96	1.78	3.23	13.24	15.38	7.53
Rolpa	4.13	1.95	0.00	5.64	3.92	1.59
Bajura	4.21	1.97	3.30	6.55	17.08	4.65
Jumla	4.29	1.54	4.39	8.49	22.54	5.24
Darchula	4.37	1.73	2.14	4.76	32.74	4.16
Mugu	4.40	1.72	4.43	12.09	18.73	4.89
Bajhang	4.42	1.92	3.80	5.46	21.39	4.68
Manang	4.72	14.00	22.04	15.07	15.19	1.39
Total	**2.82**	**1.90**	**7.84**	**4.55**	**6.22**	**1.82**

Source: Derived from NPHC 2011, CBS

Annex V: Production of different cereal crops over the years

Year	Paddy		Maize		Millet		Wheat		Barley	
	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.
1950/51	1295000	2460000	460256	828000	50000	50000	125000	120000	16000	16000
1951/52	1295000	2460000	460089	830000	50000	50000	125000	120000	16000	16000
1952/53	1315000	2500000	460089	830000	65460	60000	125000	120000	16000	16000
1953/54	1315000	2500000	449973	832000	65460	60000	125000	125000	17000	17000
1954/55	1315000	2500000	449973	832000	65460	60000	125000	125000	17000	17000
1955/56	1300000	2470000	449892	835000	60000	60000	125000	125000	17000	17000
1956/57	1295000	2460000	449892	835000	60000	60000	130000	130000	17000	17000
1957/58	1335000	2540000	449892	835000	60000	60000	130000	130000	17000	17000
1958/59	1295000	2460000	440021	840000	60000	60000	130000	130000	17000	18000
1959/60	1416000	2690000	440021	840000	75390	70000	130000	130000	17000	18000
1960/61	1088000	2108000	440021	840000	75390	70000	110000	135000	16000	18000
1961/62	1088000	2108000	432000	843000	58338	63000	112000	138000	18000	20000
1962/63	1090000	2108000	431000	843000	68000	63000	112000	138000	20000	22000
1963/64	1090000	2109000	434000	849000	69000	64000	113000	139000	22000	24000
1964/65	1101000	2201000	437000	854000	69000	63000	100000	126000	24000	26000
1965/66	1111000	2207000	451000	856000	100000	120000	118000	147000	27000	28000
1966/67	1100000	2007000	450000	824000	100000	120000	126000	159000	27000	28000
1967/68	1154000	2119000	412000	746000	102000	113000	192000	205000	25000	23000
1968/69	1162000	2178000	422000	765000	109000	121000	208000	233000	26000	23000
1969/70	1173000	2241000	433000	795000	112000	125000	226000	265000	26000	24000
1970/71	1182000	2305000	446000	833000	115000	130000	228000	193000	27000	25000
1971/72	1201000	2344000	439000	759000	115000	130000	239000	223000	28000	25000
1972/73	1140000	2010000	446000	822000	121000	134000	259000	312000	27000	25000
1973/74	1227000	2416000	453000	814000	125000	142000	274000	308000	28000	26000
1974/75	1240000	2452000	458000	827000	125000	140000	291000	331000	28000	26000
1975/76	1255795	2604751	452520	747810	125520	142610	328574	387007	26478	24667
1976/77	1261619	2386272	445350	797339	121794	138037	348280	361853	24869	20595
1977/78	1264060	2282430	444980	740470	121130	129510	367240	411270	25500	22450
1978/79	1262650	2339280	454140	742590	123410	133140	356180	415230	26160	22690
1979/80	1254240	2059930	432340	575910	122810	119340	366860	439990	26020	23290
1980/81	1275520	2464310	457450	742940	121780	121530	391790	477190	26680	23030
1981/82	1296530	2560080	475490	751520	122100	121710	399890	525930	27020	23320
1982/83	1264840	1832620	510770	718240	129110	121070	483820	656630	24340	21160
1983/84	1334200	2756980	503770	761110	123870	114910	471750	633700	24830	22270
1984/85	1376860	2709430	578720	819850	134370	124430	451890	533720	27390	23460
1985/86	1391040	2804490	614680	873750	151050	137940	482820	598000	29320	23430
1986/87	1333360	2372020	626710	868350	150780	137590	535530	701040	28560	24670
1987/88	1423290	2981780	673810	901500	164770	150130	596750	744600	29110	24290

Year	Paddy		Maize		Millet		Wheat		Barley	
	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.
1988/89	1450470	3283210	721870	1071610	182560	183090	599290	830050	29450	27020
1989/90	1432850	3389670	751170	1200990	193490	224780	604240	854960	29540	27390
1990/91	1455170	3502160	757710	1230950	198570	231630	592740	835970	29610	27840
1991/92	1411810	3222540	754090	1204710	198240	228660	571260	761960	29660	27640
1992/93	1262110	2584900	775220	1290500	201770	236750	613980	765000	29680	27610
1993/94	1450449	3495589	754099	1253830	225207	245957	611309	898892	37385	35157
1994/95	1368423	2906184	771410	1302116	228061	252843	624329	941680	39096	37108
1995/96	1496790	3578830	791700	1331060	260090	282440	653500	1012930	39400	41340
1996/97	1511230	3710650	793720	1316840	259940	289480	667120	1071970	35280	36690
1997/98	1506340	3640860	799060	1367340	262440	285120	640030	1030320	35590	37150
1998/99	1514210	3709770	802290	1345910	263950	291370	640802	1086470	31843	31798
1999/00	1550990	4030100	819010	1445450	263450	295380	660040	1183530	28196	30817
2000/01	1560044	4216465	824525	1484112	259888	282852	641030	1157865	28194	30488
2001/02	1516980	4164687	825980	1510770	258120	282570	667077	1258045	27722	30790
2002/03	1544660	4132500	836190	1569140	259130	282860	669014	1344192	27555	31711
2003/04	1559436	4455722	834285	1590097	258597	283378	664589	1387191	27467	29964
2004/05	1541729	4289827	849892	1716042	258839	289838	675807	1442442	26428	29341
2005/06	1549447	4209279	850947	1734417	261673	290936	672040	1394126	26227	27786
2006/07	1439525	3680838	870401	1819925	265160	284813	702664	1515139	26580	28293
2007/08	1549262	4299246	870166	1878648	265496	291098	706000	1572000	26000	28000
2008/09	1556000	4524000	875000	1931000	266000	293000	695000	1344000	25800	23000
2009/10	1481289	4023823	875660	1855184	268473	299523	731131	1556539	26600	27587
2010/11	1496476	4460278	906253	2067522	269820	302691	767499	1745811	28461	30240
2011/12	1531493	5072249	871387	2179414	10339	10021	765357	1846193	27950	34816

Source: Ministry of Agriculture Development

Annex VI: Food Balance Sheet

Food Balance Sheet of Nepal 2012/13

Food Commodities	Food/ person/ year	Food/ person/ day	Nutrients Per Capita Per Day in Grams					
	Kg	gm	KCalorie	Protein (gm)	Fat (gm)	Carbohy-drate	Miner-als	Fiber
Total	574.00	1572.60	3068.69	85.58	36.16	590.21	**19.40**	**13.56**
Plant sources	502.25	1376.03	2883.49	71.95	24.55	572.73	16.79	13.56
Plant sources (%)	87.50	87.50	93.96	84.08	67.88	97.04	86.57	100.00
Animal source	71.75	196.57	185.20	13.63	11.61	17.48	2.61	0.00
Animal source (%)	12.50	12.50	6.04	15.92	32.12	2.96	13.43	0.00
Total of Cereals	227.35	622.88	2176.39	52.45	14.80	436.24	**9.49**	**6.09**
Paddy								
Paddy/Rice	106.48	291.73	1009.37	19.25	3.50	225.50	5.83	2.04
Wheat Flour	40.50	110.96	378.39	13.43	1.89	59.14	0.67	0.33
Noodles	1.69	4.63	21.71	0.34	0.86	3.10	0.16	
Biscuit	1.66	4.55	19.02	0.43	0.70	3.27	0.05	
Loaf & Others	5.17	14.18	50.89	1.31	1.01	6.24		
Maize Flour	60.39	165.45	595.60	15.22	6.45	119.29	1.99	2.65
Millet Flour	9.74	26.69	85.95	2.06	0.32	18.71	0.77	0.99
Barley Flour	0.38	1.03	3.45	0.12	0.05	0.72	0.01	0.04
Buckwheat Flour	0.11	0.31	0.99	0.03	0.01	0.27	0.01	0.04
Others Cereals	0.01	0.04	0.12	0.00	0.00			
Others/Proceed Cereals	1.21	3.32	10.91	0.27	0.01			
Potato, Root & Tuber	87.36	239.35	232.63	3.91	0.24	53.71	**1.47**	**1.38**
Potato	84.07	230.33	223.42	3.69	0.23	51.59	1.34	1.38
Processed Potato	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00
Roots & Tuber								
Sweet Potato	0.65	1.78	2.16	0.02	0.01	0.51	0.02	
Colocasta	2.28	6.24	6.05	0.19	0.01	1.32	0.11	
Other Tubers	0.36	0.99	0.99	0.02	0.00	0.28	0.01	
Sugar, Honey & Others	19.04	52.15	123.65	0.11	0.10	29.99	**0.42**	**0.00**
Sugarcane	8.23	22.55	6.76	0.05	0.09	2.05	0.09	
Sugar	7.31	20.04	79.76	0.02	0.00	19.92	0.02	

(Table continues...)

Food Commodities	Food/ person/ year	Food/ person/ day	Nutrients Per Capita Per Day in Grams					
	Kg	gm	KCalo-rie	Protein (gm)	Fat (gm)	Carbohy-drate	Miner-als	Fiber
Khadsari	0.19	0.52	2.08	0.00	0.00			
Raw Sugar	3.23	8.85	34.44	0.04	0.01	7.94	0.30	
Honey/Other Honey	0.07	0.19	0.61	0.00	0.00	0.07	0.00	
Confectionary & Others	0.00	0.00	0.00	0.00	0.00			
Pulses	11.75	32.20	110.64	8.42	0.35	18.91	**0.83**	**0.54**
Lentil (Musuro)	7.36	20.18	69.21	5.69	0.12	11.90	0.42	0.14
Pigeon Pea (Arahar)	0.54	1.48	4.96	0.33	0.03	0.85	0.05	0.02
Blackgram(Mas)	0.71	1.94	6.74	0.47	0.03	1.16	0.06	0.02
Chick peas (Chana)	0.32	0.87	3.22	0.18	0.05	0.52	0.03	0.04
Others Pulses	2.77	7.60	26.06	1.72	0.13	4.47	0.27	0.32
Processed Pulses	0.05	0.14	0.45	0.03	0.00			
Vegetables	109.20	299.17	80.42	4.90	1.57	14.21	**3.68**	**3.72**
Cauliflower	17.18	47.08	19.30	0.35	1.13	3.58	1.51	0.94
Cabbage	15.35	42.06	11.36	0.76	0.04	1.93	0.25	0.42
Radish Leaves	8.73	23.93	6.70	0.91	0.10	0.57	0.14	0.38
Mustard Leaves	4.74	12.99	4.42	0.52	0.08	0.42	0.21	0.10
Bitterguard	2.92	8.01	2.00	0.13	0.02	0.34	0.06	0.06
Pointed guard	0.77	2.12	0.59	0.04	0.01	0.09	0.02	0.02
Snake guard	0.36	0.99	0.18	0.00	0.00	0.03	0.00	0.01
Brinjel	4.09	11.21	2.69	0.16	0.03	0.45	0.03	0.15
Okra	3.59	9.82	3.44	0.19	0.02	0.63	0.07	0.12
Tomato	0.38	1.05	0.37	0.02	0.00	0.04	0.01	0.01
Other Vegetables	51.08	139.95	29.39	1.82	0.14	6.13	1.37	1.51
Other Processed Veg.	0.00	0.00	0.00	0.00	0.00			
Dried Vegetables	-0.01	-0.03	-0.01	0.00	0.00			
Fruits	32.99	90.40	60.35	0.66	0.58	12.86	**0.32**	**0.43**
Mango	8.64	23.67	17.52	0.14	0.09	3.79	0.09	0.17
Banana	6.47	17.72	12.76	0.30	0.35	4.82	0.14	0.07
Papaya	1.02	2.80	0.89	0.02	0.00	0.20	0.01	0.02
Apple	2.93	8.03	4.74	0.02	0.04	1.20	0.03	0.09
Pear	1.07	2.92	1.52	0.02	0.01	0.35	0.01	0.03
Pomegranate	0.03	0.09	0.06	0.00	0.00	0.02	0.00	0.01
Mandarin Orange	4.53	12.40	5.98	0.00	0.01	1.48		

(Table continues...)

Food Commodities	Food/ person/ year	Food/ person/ day	Nutrients Per Capita Per Day in Grams					
	Kg	gm	KCalo-rie	Protein (gm)	Fat (gm)	Carbohy-drate	Miner-als	Fiber
Sweet Orange	1.27	3.49	1.68	0.02	0.01	0.57	0.02	0.02
Lime	0.64	1.75	1.03	0.03	0.02	0.28	0.02	0.03
Lemon	0.36	1.00	0.63	0.01	0.01	0.16	0.00	
Other Fruits	5.24	14.36	7.61	0.10	0.04			
Processed Fruits	0.79	2.17	5.91	0.00	0.00			
Dried Fruits	0.00	0.01	0.03	0.00	0.00			
Milk & Milk Products	56.20	153.98	114.42	5.87	6.00	17.00	**2.18**	**0.00**
Cow's Milk	8.98	24.59	16.48	0.79	1.01	1.08	0.20	
Buffalo's Milk	27.73	75.98	79.78	3.27	4.94	5.62	0.61	
Dried Skim Milk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Cow's milk/skim milk	7.37	20.19	6.86	0.69	0.02	10.30	1.37	
Buf's Milk/Skim Milk	12.12	33.22	11.29	1.13	0.03			
Other Milk	0.00	0.00	0.00	0.00	0.00			
Meat	10.58	28.99	30.78	5.76	1.16	0.00	**0.31**	**0.00**
Buffalo Meat	6.39	17.50	15.05	3.39	0.16		0.17	
Goat Sheep Meat	2.14	5.87	6.92	1.27	0.28		0.06	
Pork/Pig Meat	0.68	1.87	2.13	0.35	0.08		0.02	
Poultry Meat	1.58	4.33	8.10	0.81	0.76		0.05	
Other Meat	-0.21	-0.58	-1.43	-0.07	-0.13			
Eggs	1.54	4.21	7.28	0.56	0.56	0.03	**0.04**	**0.00**
Eggs '000' No.	1.54	4.21	7.28	0.56	0.56	0.03	0.04	
Fish	2.40	6.57	8.45	1.44	1.27	0.38	**0.08**	**0.00**
Fish Fresh	2.38	6.51	8.33	1.42	1.26	0.37	0.08	
Fish Dried/Processed	0.02	0.06	0.12	0.02	0.00	0.01		
Oil & Oil Seeds	2.32	6.36	57.22	0.00	6.36	0.00	**0.00**	**0.00**
Oil Seeds	0.00	0.00	0.00	0.00	0.00			
Oil	2.32	6.36	57.22	0.00	6.36			
Ghee & Butter	0.96	2.63	23.67	0.00	2.63	0.00	**0.00**	**0.00**
Ghee & Butter	0.96	2.63	23.67	0.00	2.63			

(Table continues...)

Food Commodities	Food/ person/ year	Food/ person/ day	Nutrients Per Capita Per Day in Grams					
	Kg	gm	KCalo-rie	Protein (gm)	Fat (gm)	Carbohy-drate	Miner-als	Fiber
Vegetable Ghee	0.00	0.00	0.00	0.00	0.00			
Spices	10.44	28.60	36.60	1.31	0.51	6.87	0.55	1.39
Cardamom	0.02	0.06	0.14	0.01	0.00	0.03	0.00	0.01
Ginger	6.80	18.62	12.48	0.43	0.17	2.29	0.22	0.45
Garlic	1.41	3.87	5.61	0.24	0.00	1.36	0.05	0.04
Turmeric	1.24	3.40	11.85	0.21	0.17	2.36	0.12	0.09
Chilli	0.97	2.65	6.52	0.42	0.16	0.84	0.16	0.80
Liquor	0.67	1.82	3.39	0.01	0.00	0.00	0.00	0.00
Liquor (Distillary)	0.52	1.42	3.22	0.01	0.00			
Beer	0.15	0.40	0.17	0.00	0.00			
Soft Drinks	1.14	3.12	2.74	0.17	0.02	0.02	0.00	0.00
Tea	0.25	0.68	1.98	0.17	0.02			
Coffee	0.01	0.03	0.04	0.00	0.00	0.02	0.00	
Soft Drinks	0.88	2.41	0.72	0.00	0.00			
Mushroom	0.06	0.16	0.06	0.02	0.01	0.00	0.03	0.02
Mushroom	0.06	0.16	0.06	0.02	0.01		0.03	0.02

Source: MoAD, 2014

Annex VII: District wise food availability and requirement in 2011/12 (Unit M ton)

District	Total edible	Requirement	Balance + -	SSR
Taplejung	46691	24440	22251	191
Sankhuwashava	44167	30501	13666	145
Solukhumbu	35533	20376	15157	174
E.mountain	126391	75317	51074	168
Panchthar	40555	39798	757	102
Illam	99807	59734	40073	167
Terhathum	38413	20237	18176	190
Dhankuta	52394	32944	19450	159
Bhojpur	90941	36620	54321	248
Khotang	94544	41631	52913	227
Okhaldhunga	41588	29653	11935	140
Udayapur	65988	65485	503	101
E.hills	524230	326102	198128	161
Jhapa	250113	149338	100775	167
Morang	213057	177128	35929	120
Sunsari	137989	138681	-692	100
Saptari	133611	118529	15082	113
Siraha	117795	117846	-51	100
E.terai	852564	701522	151042	122
E.region	1503185	1102941	400244	136
Dolakha	26170	35661	-9491	73
Sindhupalchok	81737	54990	26747	149
Rasuwa	6637	8348	-1711	80
C.mountain	114545	98999	15546	116
Ramechap	66350	41130	25220	161
Sindhuli	67137	59532	7605	113
Kavre	80479	78469	2010	103
Bhaktapur	25433	63004	-37571	40
Lalitpur	49823	97407	-47584	51
Kathmandu	55282	371258	-315976	15

(Table continues...)

District	Total edible	Requirement	Balance + -	SSR
Nuwakot	92366	55842	36524	165
Dhading	48474	67538	-19064	72
Makwanpur	87662	86690	972	101
C.hills	573007	920870	-347863	62
Dhanusha	175424	141091	34333	124
Mahottari	107477	118964	-11487	90
Sarlahi	165215	142035	23180	116
Rautahat	108132	129509	-21377	83
Bara	218854	130108	88746	168
Parsa	184416	111196	73220	166
Chitwan	86581	104621	-18040	83
C.terai	1046100	877524	168576	119
C. region	1733651	1897393	-163742	91
Manang	1165	1207	-42	97
Mustang	2246	2615	-369	86
W.mountain	3411	3822	-411	89
Gorkha	65778	53794	11984	122
Lamjung	62595	33836	28759	185
Tanahu	80391	66770	13621	120
Kaski	87793	101423	-13630	87
Parbat	45951	29361	16590	157
Syangja	129856	57362	72494	226
Palpa	60597	54160	6437	112
Myagdi	40235	22846	17389	176
Baglung	85480	54294	31186	157
Gulmi	70650	56748	13902	124
arghakhanchi	55844	40136	15708	139
w.hills	785170	570730	214440	138
nawalparasi	163378	116570	46808	140
rupandehi	252603	164533	88070	154
Kapilbastu	182761	105077	77684	174

(Table continues...)

District	Total edible	Requirement	Balance + -	SSR
w.terai	598742	386180	212562	155
W. region	1387322	960732	426590	144
Dolpa	10974	7180	3794	153
Mugu	11682	10838	844	108
Humla	2244	9992	-7748	22
Jumla	16551	21217	-4666	78
Kalikot	16985	27973	-10988	61
Mw.mountain	58436	77200	-18764	76
Rukum	51010	42891	8119	119
Rolpa	40638	46013	-5375	88
Pyuthan	41019	47773	-6754	86
Salyan	56895	49648	7247	115
Jajarkot	29533	35655	-6122	83
Dailekh	69381	53941	15440	129
Surkhet	107381	74177	33204	145
Mw.hills	395858	350098	45759	113
Dang	149477	103056	46421	145
Banke	122183	91715	30468	133
Bardiya	162786	78172	84614	208
Mw.terai	434446	272943	161503	159
Mw.region	888741	700241	188498	127
Bajura	13918	26518	-12600	52
Bajhang	20474	38145	-17671	54
Darchula	24332	25731	-1399	95
Fw.mountain	58724	90394	-31670	65
Achham	45460	52462	-7002	87
Doti	42645	42675	-30	100
Baitadi	48116	51058	-2942	94
Dadeldhura	21240	28797	-7557	74

(Table continues...)

District	Total edible	Requirement	Balance + -	SSR
Fw.hills	157460	174992	-17531	90
Kailali	171813	142892	28921	120
Kanchanpur	136831	81835	54996	167
Fw.terai	308644	224727	83917	137
Fw.region	524828	490113	34716	107
Nepal	6037727	5151420	886307	117
Mountain	361507	345732	15774	105
Hill	2435725	2342792	92933	104
Tarai	3240496	2462896	777600	132

Source: MoAD 2013

CHAPTER 7

HOUSEHOLD AND HOUSEHOLD STRUCTURE IN NEPAL

Dr. Badri Pokhrel*

Abstract

In Nepal due to the multi ethnic and multi cultural phenomena, the composition of households are different in different ethnicity/caste and ecological regions. Females mostly head the Sherpa family, whereas the Hilly and Tarai family is male dominated. Likewise, the Tharu cast population tend to live as joint families. Household size varies in different groups. 1 to 4 person households are highest in the 2011 census, whereas a 5 persons household was highest in the 2001 census. This means the nuclear family is a growing phenomenon. Furthermore, this trend also indicates a decrease in total fertility rates, resulting in a fewer number of children in a family. In regard to Development regions, on a percentage basis, the analysis shows that 1, 2 and 3 person households are highest in Western Development Region. Female-headed households have increased by 11 percentage points from 14.87% in 2001 to 25.73% in 2011. In regards to households where a member has a disability, out of 5,423,297 households, 17,978 have at least one kind of disability in the family. According to the 2011 census questionnaire there are eight categories of disability types, which include physical, blindness and low vision, deaf and hard of hearing, deaf-blind, speech problems, mental illness, intellectually disabled and multiple disabled. Out of the eight types of disabilities enumerated in the census of 2011, physical disability has the largest percentage followed by blindness or low vision and hard of hearing and speech problems respectively. The census of 2011 has endeavoured to find out the economic activeness of household heads. 81.9% of household heads are found to be usually active and 14.58% of household heads are not economically active.

7.1 Introduction

One of the basic needs of human being is 'housing' and human survival is difficult without it. A person or a group of persons live in a kind of structure which house them. A housing unit, for the census purpose is defined as a structure that provides shelter, may be a modern and permanent type structure with all kinds of facilities and amenities or semi permanent structure or a temporary structure. In Nepal, different kinds of housing structures exist and vary by ecological regions. In high mountains and in rural hilly areas, housing structures are made mostly of stones. In urban areas, concrete structures have been common. But, there still exists huts made of straw and bamboos in rural Tarai and there are many households living in squatters in slums of Kathmandu and other districts where the dwelling unit is roofed of bamboos and plastic sheets. All these kinds of structures that provide shelters were considered as dwelling unit or housing unit in the census. Type of housing in Nepal varies by geography, caste/ethnicities and culture and economic condition as well.

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Housing is also an indicator of well being and so, many users including National Planning Commission, at the time of questionnaire design, had suggested to include details about housing. Because, housing is also an pseudo poverty indicator. So, a housing unit provides shelter to 'household'. A household consists of one or more people who live in the same dwelling and also share meals or living accommodation and may consist of a single family or some other grouping of people.

In Nepal, for census purpose, a household is defined as a group of persons who live together in a housing unit and share kitchen. In order to identify the household and household members, two major conceptions are taken as 'in income-expenditure' and 'kitchen'. Furthermore, those who are not legally separated but have separate kitchen are counted as a separate household (Population Census Directive, 2011 CBS Nepal, Pg. 20). A household may consist of more than one family. A family consisting of husband and wife, and their children usually is understood as nucleus family. A household may consist of one or more than one family. Household members may or may not be blood related persons. A member of far relation or domestic workers, if live in the same house and share kitchen is considered as household member/s for the census purpose. Single member households are also reported in the census 2011.

Household head could be a person who looks after household affairs such as household economic activities and may manage earnings and expenditures. In Nepalese society, a senior most person is usually considered as a 'head' although he or she may or may not be active in looking after household affairs. In the census 2011, decision on who a head of a household, was recorded as designated by the respondent him/herself.

7.2 Family, household and household structure

Information on individual, family and household were collected in the census 2011. Name and surname of every individual including the 'head' was listed in the census questionnaire. Also, relationship of every individual to the head of the household, age, sex, caste/ethnicity, religion and economic activities etc. were enumerated. These information provide ample Information to analyze type of family and household structures.

Family structure

Generally, family includes husband and wife. In second generation, family incorporates the children. In addition to children the father and mother of the sources (husband) also are included in the family. In third generation, if the family is in single colonial form, the grandson, grand daughter and the grand father grand mother of the source are incorporated in family.

At times, family structures are the substantial make up of the members in relationship to each other without respect to roles and functions. It is said that there are famous four types of a family structure: Nuclear single parent, Extended and childless these four types of family structure give the variety of forms in the household.

Nuclear

A nuclear family consists of a mother, father and their biological or adaptive descendants. This type of family also is called traditional family. Out of four types this admired one where love to each other, time spend and emotional support is ideal and supposedly having less financial stress in terms of family upbringing.

Single Parent

If a life partner of a couple dies, the living partner handles the family, this is called single parent family. Children are most likely to live in a single parent structure for reasons other than the death of a parent.

Extended family

Extended family is two or more adults from different generations of a family, who share a household. It may be a family that includes parents, children, cousins, aunts, uncles, grand parents, foster children. At times, children are raised by their grand parents when their biological parents have died or no longer can take care of them. Extended families can be found all over the world in different communities.

Childless family

A childless family is basically a group of people from all variety of back ground and all walk of life who, for what ever reason, have never had children. To replace children, childless families usually keep pets as a substitute.

Step family

Break up of marriage is in increasing trend in Nepal also and many of these individuals have been choosing to get remarried. Death of a spouse also results in remarriage. This creates the step family, which involves two separate families merging into one new unit. It consists of a new husband and wife and their children from previous marriages or relationships. Existence of step families is common in Nepal, although they tend to have problems of adjustment, discipline, mutual understanding and so on.

7.3 Characteristics of Nepalese households

It has been attempted here to analyse household structures on the basis of information provided by census 2011. In census also the data about household composition and characteristics are made available only from 2001. Before that though, the data were published regularly since 1952/54, household and family structure data were not properly collected. However, some data about household composition like, data on head of household by sex, age and marital status were made available to the users since 2001, an effort to collect the household data are initiated. Therefore it is difficult to compare and to make in-depth study about household and family structure analysis.

As the cultural composition in Nepalese society is multi, the family and household composition also seems various. The household composition is influenced by multi ethnic and multi cultural practices. It is apparent that the Sherpa family is mostly women guided whereas the hilly and Terai society is male dominated. Likewise, family size in urban areas is smaller than in the rural areas. *Tharu* caste population wants to live in joint family, even if the family size is bigger. Land fragmentation is very common in Nepal. Having cattle in home is very common and is a part of livelihood especially in rural Nepal, irrespective to the caste and region. Nevertheless, the type of cattle may be different. For example, the *Brahmins* and *Kshetriyas* mostly keep cows and buffalos, the *Rai* and *Limbu* castse keep pigs. The women's groups especially in hill areas keep goats. Cattle services generally are the part of livelihood rather than the source of economic gain.

Nepalese people used to live in joint family, but now they prefer to live in smaller households. In Nepal the occupational structure also is gradually changing. Until two three decades ago the proportion of people engaged in agriculture was high, however, in the decades to follow the number of agriculture farmers are gradually declining. Number of people residing in rural areas is also decreasing and residing in urban areas is growing. On the contrary, the systematic planning and long term vision about upgrowing urbanization, geriatric people and stabilization in urban dwelling is not well planned.

7.4 Distribution of household size

Household size in Nepal varies in different sizes in different groups. Group starts from 1 person to nine and plus persons. 1 to 4 persons household seems highest in 2011 census, 5 persons household is highest in 2001 census. likewise, 6 persons household also seems high in 2001 census. Similarly, 7 person household is highest in 1991

census. 1981 census reveals the highest family member household of 9 and above in the census history. In 1961 census highest 16.54 percent household had 4 persons in the household followed by 15.82 of 5 persons. In 1971 census, 5 persons household was highest where 16.02 percent household was covered.

Latest 2011 census proves that household sizes are becoming thinner. However 4 persons household size is still highest followed by 5 persons . Having 1 person household is almost in same ratio and percentage in 1961 census and 2011 census. 2 persons household is enlarging from 1981 census. Same cases seem in 4 person household also. 5 persons household also is almost stagnant, even if it has been little lower in 2011 census. The households having 6 persons also are becoming fewer. 7 persons household is also are lessening since 1991 census. Since 1981, 8 persons household is decreasing sharply both in number and percentage. The census onward 1981 shows the family size in decreasing trend in the table. Percentage distribution of household size from 1961 census to 2011 census is shown in the Table 7.1.

Table 7.1: Percentage distribution of household by size 1961-2011

Household size	Percentage of household					
	1961	**1971**	**1981**	**1991**	**2001**	**2011**
Nepal (Percentage)	100	100	100	100	100	100
Number	1783975	2084062	2585154	3328721	4174374	5427302
1 person	4.68	3.94	3.86	4.04	4.04	4.70
2 persons	9.93	8.46	7.15	7.69	7.52	10.46
3 persons	14.07	12.35	10.57	10.88	10.85	14.83
4 persons	16.54	15.63	14.23	15.19	16.64	19.92
5 persons	15.82	16.02	15.83	17.07	18.18	17.80
6 persons	12.82	13.73	14.51	15.07	15.12	13.51
7 persons	9.00	10.19	11.18	11.48	11.36	7.25
8 persons	5.91	6.83	7.66	6.77	5.87	4.41
9 & more persons	11.24	12.85	15.00	11.82	10.46	7.13

Source: National Population and Housing Census 2011 (National Report and extrapolation/ author's calculation).

Urban/Rural distribution of household size

Urban and rural distribution of household size gives another picture of household size in Nepal. Urban household size is bigger than the rural. Up to 4 person household size is common in all 1981, 1991, 2001 and 2011 censuses. But reverse case seems in 5 and above household member size. This scenario proves that families having larger size, i.e., more than 4 members mostly live in rural areas. Generally, in urban areas the household size is composed of fewer members, 5 members maximum. Above that number the percentage distribution of household is decreasing. This can be seen from the Table 1.2.

Table 7.2: Percentage distribution of household by size for urban-rural 1981-2011

Household size	Percentage of Household							
	1981		1991		2001		2011	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Nepal (Percentage)	100	100	100	100	100	100	100	100
Number	153528	2431626	313342	3015379	664507	3509867	1047297	4380005
1 person	5.54	3.75	6.02	3.83	6.46	3.55	7.03	4.14
2 persons	7.22	7.15	9.05	7.55	10.02	7.05	13.85	9.65
3 persons	9.28	10.66	11.65	10.8	13.83	10.29	19.19	13.79
4 persons	12.48	14.34	16.07	15.1	20	16.00	22.98	19.18
5 persons	14.53	15.91	17.08	17.07	17.88	18.23	15.80	18.28
6 persons	13.53	14.57	13.49	15.23	12.27	15.65	9.64	14.43
7 persons	10.77	11.21	9.58	11.68	8.09	11.98	4.41	7.93
8 persons	7.57	7.67	5.43	6.91	3.87	6.24	2.59	4.84
9 & more persons	19.06	14.75	11.64	11.84	7.59	11.01	4.51	7.75

Source : National Population and Housing Census 2011 (National Report, extrapolation and author's calculation)

7.5 Development region scenario of household size

Percentage distribution of household size differs in different development regions in Nepal. In comparison to five development regions 1 person household is bigger in western development region which composes 5.81 percent in 2011 census. Similarly 2 person and 3 person household also is bigger in the same region. But when the size of the household changes from 3 to 4 and 5 the largest percentage exists in eastern development region in 2011 census. If the household is bigger than 5 persons reaching 6,7, 8, 9 and above then the largest percentage distribution of households exists in the Far Western Development region. Briefly, the smaller size of households (up to 1,2,3) are many in Western Development Region, the medium size of number 4 and 5 is in Eastern Development Region and higher number family member in household (more than 5 persons) is in Far Western Development Region in 2011 census. Nevertheless, almost similar distribution and structure seems as in the last census of 2001.

In 2001 census, 1, 2 and 3 person household is more in number in Western Development Region. 4 and 5 person household is more in Eastern Development Region. And, from 6 persons and above persons household is more in Far Western Development Region. The scenario of percentage distribution of household by size is different in different development regions between 2001 and 2011 censuses. However, the percentage figure in two different censuses varies. This can be seen from Table 7.3.

Table 7.3: Percentage distribution of household by size for development regions 2001-2011

Persons	Census 2001					Census 2011				
	EDR	CDR	WDR	MWDR	FWDR	EDR	CDR	WDR	MWDR	FWDR
All	100	100	100	100	100	100	100	100	100	100
Number	1000358	1465753	863045	479817	365401	1231505	1964045	1066362	695419	469971
1 person	3.73	4.03	4.99	3.21	3.46	4.16	4.92	5.81	3.78	4.05
2 persons	7.40	7.74	8.66	6.49	5.62	10.30	10.78	12.70	8.65	7.14
3 persons	11.18	10.75	11.82	10.30	8.78	15.50	14.62	17.31	13.23	10.68
4 persons	17.30	16.95	16.79	16.16	13.85	21.18	19.94	20.26	19.11	16.90
5 persons	18.86	18.29	17.55	18.21	17.32	18.89	17.42	16.47	18.49	18.52
6 persons	15.58	14.90	14.20	15.61	16.21	13.74	13.22	11.48	15.19	16.24
7 persons	11.54	10.99	10.54	12.17	13.20	6.96	7.01	5.93	8.58	10.06
8 persons	5.82	5.66	5.44	6.34	7.20	3.98	4.31	3.61	5.31	6.40
9 & more	8.59	10.69	10.02	11.52	14.37	5.30	7.77	6.42	7.67	10.02

Source: National Population and Housing Census 2011 (National Report and extrapolation with author's calculation).

7.6 Average household size and annual growth

Average household size in Nepal seems continuously decreasing in all perennial censuses. However, little increment had been seen in 1971 and 1981 censuses. In 1961 census the average household size was 5.3 which increased by 5.5 in 1971 and 5.8 in 1981 census. In all other census results the average size is gradually decreasing. In 2001 census the average household size was 5.4 and it is 4.8 in 2011 census. The maximum household size in census history was 5.8 in Nepal in 1981 census. Sharp decline of household size has occurred in 2011 census.

On the contrary, number of household is increasing in all perennial censuses. However, the percentage increment was little lower in 1971 census. The annual growth rate of household in 1961 was 1.57 and in 1971 it was limited in 1.55 percent. In 1952/54 census, total number of households was 1524511 which reached 5427302 in 2011 census. In this 60 years interval the growth of household reached almost 355 percent. Likewise, the population has reached 26494504 from 8256625 within the 60 years of time frame. The annual growth of population in 1981 census is maximum and minimum in 1961 census. Such a comparative scenario of household, population and their annual growth rate is depicted in Table 7.4 below.

Table 7.4: Average household size and its annual growth 1952/54- 2011

Census Year	Household	Population	Average Household size	Annual Growth of Household (%)	Annual Growth rate of Population (%)
1952/54	1524511	8256625	5.4	-	-
1961	1783975	9412996	5.3	1.57	1.31
1971	2084062	11524250	5.5	1.55	2.02
1981	2585154	15022839	5.8	2.15	2.65
1991	3328721	18491097	5.6	2.53	2.08
2001	4174374	23151423	5.4	2.45	2.25
2011	5423297	26494504	4.88	2.61	1.35

Source: National Population and Housing Census 2011 (National Report and extrapolation and author's calculation).

Figure 7.1: Average household size and growth rate

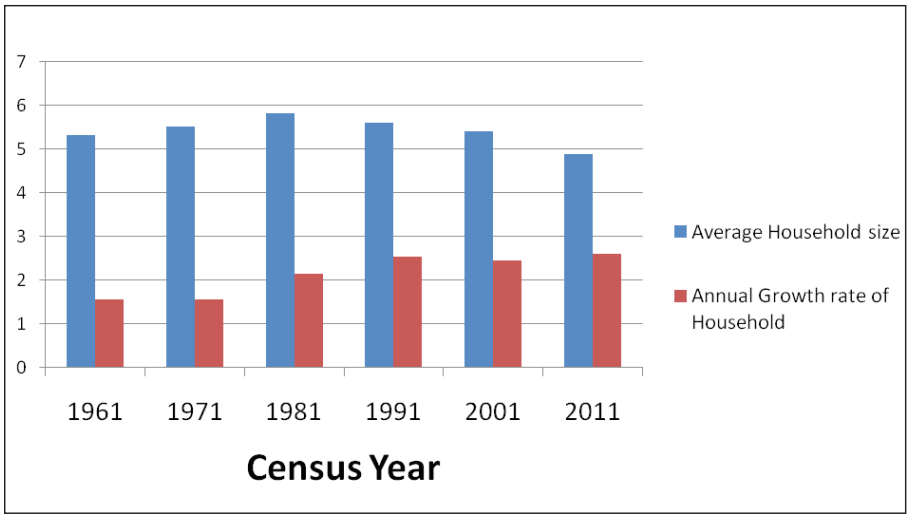


Figure 7.1 shows the average household size and its growth rate. In the figure average household size and annual growth rate of household is shown. Census 1961 to census 1981 average household size is increased. Annual growth rate of household, up to 1971 is constant or insignificantly decreased, but in all other censuses annual growth of household is increasing constantly; whereas the average household size is continuously decreasing. In nutshell, viewing the table it is clearly seen that annual growth of household size is decreasing and annual growth of household number is increasing.

7.7 Household heads by age and sex

National population census 2011 has published the data of household heads by age and sex. Out of the total 5427302 households, male headed households are 4030610 and female headed households are 1396692. As per the national census 2011 Directives (Ganana Nirdeshika 2068), before 10 years of age no boys or girls can be recognized as household heads (Page 23). Out of the above 10 years of age 30 to 39 age group occupy the highest number of household heads followed by 40-49 age group. In 10-14 age group there are 7403 household heads

which compose of 4777 male and 2626 females. After 40 - 49 age group the headship starts to decrease. Almost same scenario were found in the census of 2001 too.

In 2001 out of the total households 4174374, composition of male and female was 3553390 and 620984 respectively. In percentage terms according to the 2001 census the male and female household heads occupied 85.12 and 14.88 percent respectively; whereas the 2011 census shows the percentage of male and female household heads as 74.27 and 25.73 respectively. In the latest census the number of female headed households has increased by more than 11 point percent. Obviously among other reasons can be said that increasing number of absent males for foreign employment made responsible to the female members to be the head of the households. The status of household heads by age and sex is shown in Table 7.5 below.

Table 7.5: Household head by age group and sex, 2001-2011

Age group	Household head 2001			Household head 20011		
	Total	Male	Female	Total	Male	Female
Nepal	4174374	3553390	620984	54,27,302	40,30,610	13,96,692
10-14	1839	1487	352	7,403	4,777	2,626
15-19	46347	36933	9414	66,325	40,321	26,004
20-29	598696	491431	107265	7,78,426	4,58,730	3,19,696
30-39	1069787	916200	153587	12,85,500	8,90,329	3,95,171
40-49	993270	867993	125277	12,51,777	9,95,013	2,56,764
50-59	741842	644954	96888	9,72,773	8,07,586	1,65,187
60-69	475705	393521	82184	6,95,160	5,48,149	1,47,011
70 Years & Above	246888	200871	46017	3,69,938	2,85,705	84,233

Source: National Population and Housing Census 2011 (National Report and extrapolation and author's calculation).

7.8 Economic Activities of Household Heads

Census 2011 has categorized the household heads as economically active and not active. There are four types of economic activity features as - a. Economically not active, b. Usually not active, c. Usually active, and d. Not stated. 81.90 percentof household heads are usually active. On the contrary, 14.58 percent of household heads are economically not active. Out of remaining 3.52 percent usually not active household heads are 3.11 percent. Only 0.41 percent household heads did not mention about their occupation or involvement in any activities.

On the basis of National Population and Housing Census 2011 data and calculation, usually active households are included in economically active category, even if they have no occupation. Highest number of household occupation seem in skilled agriculture, forestry and fishery works (47.56%) and lowest number is counted to armed forces (0.22%). Out of the total economically not active and usually active household heads female household heads occupy 7.6 % and 16.26% respectively. The detail occupational category and their percentages are shown in Table 7.6 below.

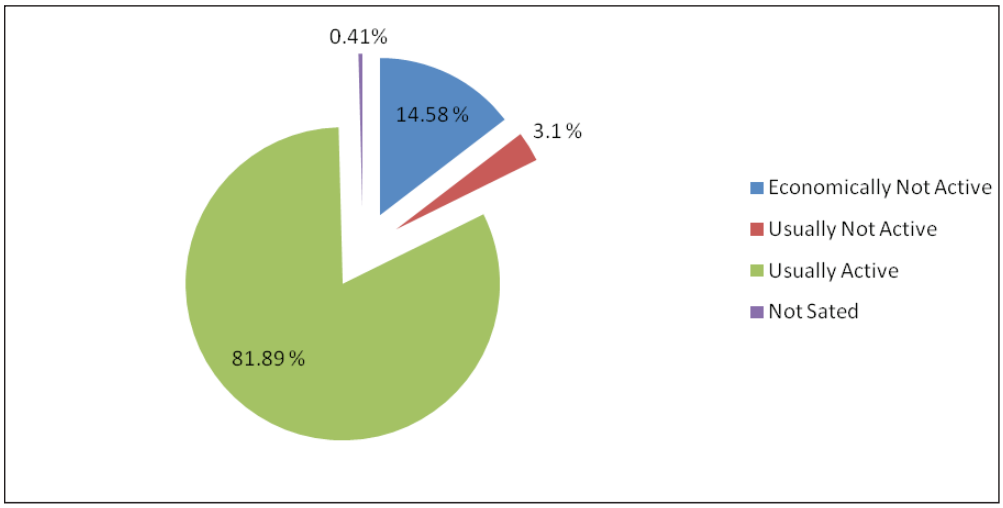
Table 7.6: Household heads by status of activity and occupation

Economically Active/Occupation		Sex of Household Head (%)		
		Male	Female	Total
Economically Activity	Total	74.33	25.67	100.00
	Economically Not Active	6.98	7.60	14.58
	Usually Not Active	1.37	1.74	3.11
	Usually Active	65.64	16.26	81.90
	Not Sated	0.34	0.08	0.41
Occupation	Usually active but no occupation	0.38	0.08	0.47
	Armed forces	0.21	0.01	0.22
	Managers	1.09	0.21	1.30
	Professionals	2.99	0.41	3.40
	Technicians and associate professional	1.86	0.20	2.06
	Office assistance	1.07	0.18	1.25
	Service & sale workers	6.31	1.15	7.47
	Skilled agri.,forestry & fishery workers	35.83	11.73	47.56
	Craft and related trades workers	6.75	0.69	7.44
	Plant & machine operators & assemblers	1.96	0.07	2.03
	Elementary occupations	6.10	1.37	7.47
	Not stated	1.08	0.16	1.24
	Total	65.64	16.26	81.90

Source: National Population and Housing Census 2011 (National Report).
Note: Usually Active but having no Occupation are also listed in the Occupation categories.

Activities of household heads are also shown in pie diagram below (Figure 7.2)

Figure 7.2: Activity of household head



7.9 Female Owned Households and fixed assets

According to the National Report of National Population and Housing Census 2011 the female headed households have increased by 11 point percent from 14.87 % in 2001 to 25.73 % in 2011. However, all female household heads do not have fixed assets. Altogether 19.71 percent of households reported the ownership of land or house or both in the name of the female member of the household irrespective to household head or not.

The female household heads having fixed assets, both house and land are 580757 and having land only are 488314. Altogether fixed assets ownership goes to 1069017 number household heads which is just 19.71 percent of the total number of households (5423297). Out of the total households 43666 households did not state about the property in female household owner's name.

The fixed assets ownership of female headed household in urban area is 279917 which is 5.16 percent of total and remaining 14.54 percent goes to the rural area family headed households.

Similarly, the fixed assets of female who head the family in Mountain, Hill and Terai also varies. In the mountain out of the total female headed households there are 40156 household heads and in hill there are 452950 female headed households. And the remaining 575965 female headed households are in Terai who hold property in their names. By ecological zone maximum numbers of families who head the family own property in their names is of Terai.

On the basis of development regions having fixed assets of female headed household are highest number in CDR and the lowest number is in FWDR. EDR and WDR occupy second and third position respectively.

In the Table 7.7, households having neither house nor land in women's name are 4310560 and not stated is 43666. Their urban- rural as well as ecological zone and development region breakdown also is depicted in Table 7.7 below.

Table 7.7: Households having fixed assets in female's ownership

Area		Total	Female ownership in			Not stated
			Both house & land	Land only	Neither house nor land	
Nepal		54,23,297	5,80,757	4,88,314	43,10,560	43,666
Urban/Rural	Urban	10,45,575	1,73,984	1,05,933	7,56,303	9,355
	Rural	43,77,722	4,06,773	3,82,381	35,54,257	34,311
Ecological zones	Mountain	3,63,698	19,836	20,320	3,21,376	2,166
	Hill	25,32,041	2,51,108	2,01,842	20,61,677	17,414
	Terai	25,27,558	3,09,813	2,66,152	19,27,507	24,086
Developments regions	Eastern Dev. Region	12,30,743	1,55,140	1,56,536	9,09,780	9,287
	Central Dev. Region	19,62,238	2,18,221	1,81,482	15,41,887	20,648
	Western Dev. Region	10,65,599	1,30,861	93,434	8,33,801	7,503
	Mid-Western Dev. Region	6,95,014	54,192	42,094	5,95,010	3,718
	Far-Western Dev. Region	4,69,703	22,343	14,768	4,30,082	2,510

Source: National Population and Housing Census 2011 (National Report and extrapolation and author's calculation).

On the basis of above Table 7.7, the number of female headed households having fixed assets also can be calculated. Their total number and percentage can be seen in Table 7.8 below.

Table 7.8: Female headed households having fixed assets- 2011

Region	Total	Percentage
Nepal	1069071	100.00
Urban	279917	26.18
Rural	789154	73.82
Ecological Zone		
Mountain	40156	3.76
Hill	452950	42.37
Terai	575965	53.88
Development Region		
EDR	311676	29.15
CDR	399703	37.39
WDR	224295	20.98
MWDR	96286	9.01
FWDR	37111	3.47

Source: National Population and Housing Census 2011 (National Report and extrapolation and author's calculation).

According to the Table 7.8, there are 1069071 households headed by females and having fixed assets. Out of the total 73.82 percent goes to rural and remaining 26.18 is occupied by urban females who head their respective households. By ecological belt female headed households in Terai occupy 53.87 percent household having fixed assets, followed by 42.37 percent in hill and 3.76 percent in mountain respectively.

7.10. Households having disabilities

According to the Table 7.9, altogether there are 17978 households having at least one kind of disabilities. Disabilities are separated in urban-rural, ecological belt and development region wise. In census questionnaire there are eight categories of disability types including physical, blind and low vision, deaf and hard of hearing, Deaf /Blind, Speech problem, Mental illness, Intellectual disable and multiple disables. Out of the eight disability types, households having physical disability is largest in Nepal followed by blindness and low vision, both in household and population. Status of deaf and hard of hearing and speech problem occupy third and fourth positions respectively. Fully blind and fully deaf are lowest in disability category both in household and population number.

In term of urban-rural ratio the picture is almost similar with the national picture in household and population number. In term of ecological belt the hill people are going through the highest number of physical disability followed by mountain people and household as well. In hill and Terai almost similar number of disabilities, disable population and households appear. Highest number of disabilities appear in CDR followed by EDR. Lowest number of disable households are in FWDR. The detail picture of households and population regarding disabilities and their types are shown in Table 7.9.

Table 7.9: Household having disabilities, 2011

Types of disability and households		Total	Urban/Rural		Ecological Belt			Development Region				
			Urban	Rural	Mountain	Hill	Terai	EDR	CDR	WDR	MWDR	FWDR
Total	Household	5,427,302	1,047,297	4,380,005	364,120	2,534,430	2,528,752	1,231,505	1,964,045	1,066,362	695,419	469,971
	Population	26,494,504	4,523,820	21,970,684	1,781,792	11,394,007	13,318,705	5,811,555	9,656,985	4,926,765	3,546,682	2,552,517
Population without disability	Household	5,409,324	1,044,947	4,364,377	361,649	2,524,174	2,523,501	1,227,817	1,958,673	1,062,225	692,739	467,870
	Population	25,981,183	4,469,016	21,512,167	1,728,552	11,142,227	13,110,404	5,700,206	9,512,314	4,830,571	3,453,407	2,484,685
Physical	Household	174,131	18,193	155,938	18,909	86,885	68,337	37,662	46,866	31,824	33,251	24,528
	Population	186,457	19,641	166,816	20,439	93,367	72,651	39,637	50,465	33,560	36,181	26,614
Blindness/ low vision	Household	87,226	9,133	78,093	9,003	39,590	38,633	16,564	27,618	14,041	15,609	13,394
	Population	94,765	10,477	84,288	9,531	42,713	42,521	17,571	30,985	15,110	16,772	14,327
Deaf/hard to hearing	Household	73,894	6,779	67,115	9,178	39,017	25,699	15,503	18,022	14,257	15,846	10,266
	Population	79,307	7,494	71,813	9,902	41,975	27,430	16,606	19,080	15,478	17,167	10,976
Deaf-blind	Household	8,799	1,023	7,776	916	4,166	3,717	1,800	2,706	1,492	1,601	1,200
	Population	9,436	1,363	8,073	945	4,334	4,157	1,857	2,822	1,553	1,953	1,251
Speech problem	Household	54,647	5,722	48,925	5,033	26,376	23,238	13,437	16,252	11,462	8,077	5,419
	Population	58,855	6,219	52,636	5,362	28,387	25,106	14,447	17,576	12,372	8,700	5,760
Mental disable	Household	29,952	3,973	25,979	2,138	13,865	13,949	7,268	8,832	6,716	4,037	3,099
	Population	30,997	4,161	26,836	2,201	14,323	14,473	7,532	9,214	6,921	4,146	3,184
Intellectual disable	Household	14,133	1,725	12,408	1,018	7,348	5,767	3,271	4,257	3,326	2,007	1,272
	Population	14,888	1,826	13,062	1,071	7,781	6,036	3,444	4,479	3,508	2,128	1,329
Multiple Disable	Household	36,110	3,404	32,706	3,579	17,686	14,845	9,547	9,296	7,194	5,875	4,198
	Population	38,616	3,623	34,993	3,789	18,900	15,927	10,255	10,050	7,692	6,228	4,391

Source: National population and housing census 2011

7.11 Households having domestic workers

Keeping domestic worker in home reflect a wealthy family in Nepal. Nevertheless, there is no so common practice to keep domestic worker in the families. According to the census 2001 there were only 57295 persons reported as domestic workers in the country and among them 62.8 percent male and 37. 2 percent females respectively. (Population Monograph of Nepal, CBS, 2003 (reprint 2008), p. 128)**.**

According to the 2011 census households having domestic workers are 41418 and the number of domestic workers are 57438. In 10 years census interval only 143 domestic workers are added. In comparison to the added number of population 3343081 (26494504-23151423 total population in census 2011 and 2001 census respectively) in 10 years interval the increases number is insignificant and is in decreasing trend. This shows that the practice of domestic worker is becoming lesser. Obviously, the number of domestic worker in urban area is higher than in the rural areas. Ratio of domestic worker in mountain is highest followed by the hill and Terai respectively. Similarly, the highest number of domestic workers is in CDR followed by EDR. Number of domestic worker is fewest in FWDR. On the basis of ecological development regions central hill occupies the highest number of domestic worker. More than 40 percent of domestic workers are hired in Central Hill. Kathmandu district is the highest one where 15670 domestic workers (27.28%) are working. District wise number of households having domestic workers is depicted in Table 7.10 below.

Table 7.10: Households having domestic workers 2011

Area	Domestic Worker	
	Household Having Domestic Worker	Number of Domestic Worker
Nepal	41,418	57,438
Urban/Rural		
Urban	18,854	26,695
Rural	22,564	30,743
Ecological Belt		
Mountain	2,251	3,141
Hill	24,463	34,517
Terai	14,704	19,780
Development Region		
Easter Dev. Reg.	9,602	12,767
Central Dev. Reg.	21,111	29,853
Western Dev. Reg.	6,707	9,681
Mid-West. Dev. Reg.	2,818	3,567
Far-West. Dev. Reg.	1,180	1,570
Eco-Development Region		
Eastern Mountain	894	1,264
Eastern Hill	2,474	3,347
Eastern Terai	6,234	8,156
Central Mountain	602	802
Central Hill	16,297	23,052
Central Terai	4,212	5,999
Western Mountain	300	508
Western Hill	4,342	6,351
Western Terai	2,065	2,822
Mid-West. Mountain	280	360
Mid-West. Hill	1,039	1,327
Mid-West. Terai	1,499	1,880
Far-West. Mountain	175	207
Far-Western Hill	311	440
Far-Western Terai	694	923
District		
Taplejung	199	273
Panchthar	234	307
Ilam	702	993
Jhapa	2,181	2,735
Morang	2,097	2,742
Sunsari	1,296	1,790
Dhankuta	264	360
Terhathum	114	150
Sankhuwasabha	227	314
Bhojpur	151	176
Solukhumbu	468	677
Okhaldhunga	242	344
Khotang	266	363

Area	Domestic Worker	
	Household Having Domestic Worker	Number of Domestic Worker
Udayapur	501	654
Saptari	360	478
Siraha	300	411
Dhanusa	836	1,284
Mahottari	263	357
Sarlahi	429	504
Sindhuli	389	467
Ramechhap	233	279
Dolakha	215	278
Sindhupalchok	333	468
Kavrepalanchok	471	751
Lalitpur	2,498	3,436
Bhaktapur	657	1,125
Kathmandu	11,146	15,670
Nuwakot	185	218
Rasuwa	54	56
Dhading	301	546
Makwanpur	417	560
Rautahat	327	390
Bara	369	490
Parsa	344	461
Chitawan	1,644	2,513
Gorkha	296	440
Lamjung	277	381
Tanahu	417	709
Syangja	296	420
Kaski	1,559	2,408
Manang	105	172
Mustang	195	336
Myagdi	261	358
Parbat	164	227

Area	Domestic Worker	
	Household Having Domestic Worker	Number of Domestic Worker
Baglung	223	308
Gulmi	332	421
Palpa	342	466
Nawalparasi	587	838
Rupandehi	1,153	1,583
Kapilbastu	325	401
Arghakhanchi	175	213
Pyuthan	223	270
Rolpa	131	169
Rukum	105	126
Salyan	97	117
Dang	541	715
Banke	659	802
Bardiya	299	363
Surkhet	331	452
Dailekh	114	152
Jajarkot	38	41
Dolpa	65	75
Jumla	71	120
Kalikot	36	42
Mugu	29	34
Humla	79	89
Bajura	71	90
Bajhang	62	67
Achham	106	159
Doti	128	179
Kailali	479	662
Kanchanpur	215	261
Dadeldhura	50	72
Baitadi	27	30
Darchula	42	50

Source: National Population and Housing Census 2011 (National Report and extrapolation).

7.12 Household Having Absentees

In census 2011, number of households and absentee population has been largely increased in comparison to census 2001. In 2001, absentee households were 529718 which grew by 1378678 in 2011. Similarly, in 2001, 762181 population (Male 679469 and female 82712) were absent. But in 2011, number of absentee population is 1921494 (Male 1684029 and female 237400). By region, highest number of absentee population and their household is in WDR. In WDR, altogether 405819 households and 579834 population (Male 518502 and female 61326) are counted as absentee household and population. Absentee population and the household numbers are shown in Table 7.11 below.

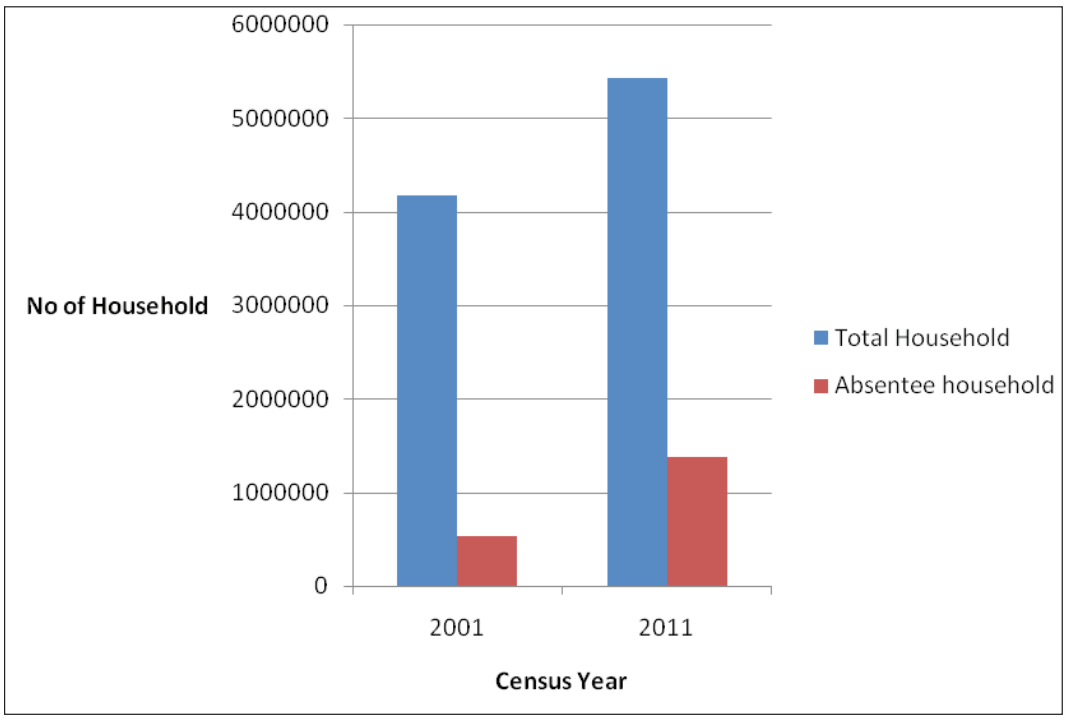
Table 7.11: Households having absentees, 2001-2011

Regions	Census 2001					Census 2011				
	Total Household	Absent household	Absent Population			Total Household	Absent household	Absent Population		
			Total	Male	Female			Total	Male	Female
Nepal	4174374	529718	762181	679469	82712	5,423,297	1,378,678	1,921,494	1,684,029	237,400
Eastern Dev. Region	1000358	93107	121911	111080	10831	1,230,743	333,016	429,870	388,619	41,232
Central Dev. Region	1465753	81246	107631	94791	12840	1,962,238	350,551	464,456	395,402	69,025
Western Dev. Region	863045	222479	331880	296811	35069	1,065,599	405,819	579,834	518,502	61,326
Mid-Western Dev. Region	479817	64930	94724	85191	9533	695,014	158,323	221,261	196,695	24,563
Far-Western Dev. Region	365401	67956	106035	91596	14439	469,703	130,969	226,073	184,811	41,254

Source: National Population and Housing Census 2011 (National Report and extrapolation and author's calculation).

Figure 7.3 below shows the position of absentee households in total households in two different censuses (2001 and 2011) in Nepal.

Figure 7.3: Absentee Households



7.13 Institutional household and population

Number of institutional households and their population was recorded in 2011 census. Institutional households are defined as the family who stay in the houses owned by an organization or government without paying rent to the owner. If the family who resides in the house but does not pay rent, even if the institution pays rent, in that case also the residing family is recorded as the institutional household (Ganana Nirdeshika 2068, CBS p. 24). Out of the total households 5427302, institutional households are 4005. Mostly they are official quarters, army barracks, Guthi houses, residential buildings and so on. All total in Nepal there are 4005 institutional households; 1722 are situated in urban area and 2283 are situated in rural area. Total population residing in the institutional households are 240676 (urban 117775 and rural 122901). Out of total population residing in the institutional households 202226 are male and 38450 are females. On the basis of ecological belt the institutional households are located in varied locations. 422, 2389 and 1194 number of households are located in mountains, hills and Terai respectively. More number of institutional households are seen in CDR followed by EDR. On the basis of ecological development region central hill has the highest number of institutional households followed by western hill. Institutional households and residing male and female population is depicted in Table 7.1.

Table 7.12: Institutional households

Geographical Areas		Number of household	Population		
			Total	Male	Female
Urban/Rural	Urban	1,722	117,775	96,298	21,477
	Rural	2,283	122,901	105,928	16,973
Ecological Belt	Mountain	422	15,267	13,255	2,012
	Hill	2,389	143,963	118,019	25,944
	Terai	1,194	81,446	70,952	10,494
Development Region	Easter Dev. Region	762	38,192	33,602	4,590
	Central Dev. Region	1,807	105,289	84,030	21,259
	Western Dev. Region	763	42,133	35,076	7,057
	Mid-Western Dev. Region	405	33,533	29,957	3,576
	Far-Western Dev. Region	268	21,529	19,561	1,968
Eco-Development Region	Eastern Mountain	74	2,300	2,060	240
	Eastern Hill	198	11,990	11,148	842
	Eastern Terai	490	23,902	20,394	3,508
	Central Mountain	120	4,653	3,914	739
	Central Hill	1,416	80,729	62,653	18,076
	Central Terai	271	19,907	17,463	2,444
	Western Mountain	81	2,570	1,968	602
	Western Hill	511	27,277	22,279	4,998
	Western Terai	171	12,286	10,829	1,457
	Mid-Western Mountain	100	3,738	3,395	343
	Mid-Western Hill	128	16,239	14,749	1,490
	Mid-Western Terai	177	13,556	11,813	1,743
	Far-Western Mountain	47	2,006	1,918	88
	Far-Western Hill	136	7,728	7,190	538
	Far-Western Terai	85	11,795	10,453	1,342

7.14 Findings and Conclusions

1. Since the time immemorial Nepal is a multi ethnic nation having diversity in culture and tradition. The family structure of Nepali people is unique and household characteristics are varied in terms of the ecology, geography, customs and traditions. Therefore, historically household structure and characteristics of different families are very unique and special, so difficult to match with other cultures.

2. Nepal's geography and topography is varied. Just almost 30 meter from sea level to highest top of the world is found in Nepal. Therefore, sever hot to sever cold temperature exist. So, the weather condition is also varies with varied humidity.

3. On the basis of geography and weather infrastructures are formed, constructions are done, houses are made and life saving modalities are designed so that the structure, nature and shapes of the houses are varied.

4. Foreign employment has been increasing as an attractive livelihood option. People of Nepal specially, t h e

young are emigrating out in search of job and employment. So the change in household head status has occurred and the source of income is diversified.

5. Female headed households and their fixed assets are increasing in size and volume. It is the result of the adoption of policies to increase female ownership of assets. So the fixed assets in women's name is broadening.

6. Households having domestic workers are not increased in 2011 census on the basis of 2001 census. Urban households have more domestic workers than the rural households. Kathmandu has the highest number of domestic workers compared to other districts.

7. Skilled agriculture, Forestry and Fishery workers deserve the highest economically active position. Usually active household heads are 81.9 percent with the composition of 65.64 percent male and 16.26 percent female. In the census of 2011 economically not active household heads are 14.58 percent.

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CHAPTER 8

HOUSEHOLD AMENITIES AND DURABLE GOODS

Rabi Prasad Kayastha*

Abstract

The purpose of this chapter is to observe the intercensal changes in the coverage of household facilities, such as sources of drinking water, cooking fuel, lighting fuel and toilets. It describes the disparity in coverage among different parts of the country, urban/rural, ecological zones and development regions. It also studies the discrepancies between different parts of the country in terms of the possession of household consumer durable goods and services such as radio, television, mobile phone, vehicles etc. The coverage of improved source of drinking water that includes tab/piped, tube-wells and covered wells has substantially increased and the Millennium Development Goal (MDG) target was reached. But there was no substantial change in the use of solid fuel (firewood, leaves, cow-dung and agricultural residue) for cooking. However, the share of kerosene in cooking fuel has drastically decreased and the percentage of LP gas users has significantly increased between the two censuses. Similarly, the coverage of kerosene as a source of lighting fuel has reduced drastically during the census periods. Electricity is now a major source of lighting fuel and the coverage has significantly increased in 2011 compared to 2001. The coverage of toilet facilities has also increased during the intercensal period, exceeding 90% in urban areas. A higher disparity was observed in the possession of consumer durable goods and services among urban/rural, ecological zones and development regions. Gender disparity was minimal in the possession of at least one of these goods and services in the household.

8.1 Introduction

Housing is one of the basic needs of human beings and it needs to have some essential services, such as access to improved sources of drinking water, sanitation, cooking fuel and electricity. On top of these facilities, modern households should have a variety of consumer durable goods, such as radios, televisions, vehicles, internet, mobile phone etc. Possession of these household amenities shows the quality of life and reflects the living standards and the level of socio-economic development of the country. In Nepal, there are regional as well as urban/rural variations in access to these amenities. Similarly, there is also a disparity among the three ecological zones. There is also a vast disparity among districts in possession of household facilities.

In regard to household assets and amenities, there are certain targets that need to be reached in order to achieve the Millennium Development Goals (MDGs). Some indicators related to household facilities have achieved such targets, such as improved sources of drinking water. However, many indicators have yet to achieve their targets and importance needs to be given to reach these targets.

Access to improved sources of drinking water, sanitation, sources of cooking and lighting fuels, and possession of consumer durable goods, such as radios, internet, mobile phones, etc. are closely related to household income. Possession and access to these household amenities are positively related to the development of related infrastructure in localities or settlements. Therefore, the national government has to develop these infrastructures. In this regard, the prime objectives of Nepal's periodic development plan are to provide these basic household amenities and services.

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8.2 Sources of Data

The Population Census of 2001 collected some information on household facilities. The census used two sets of questionnaires. The first set was used in complete enumeration and the second set was for sample enumeration. Information on household facilities was derived from the sample enumeration. In the census, information was collected on household facilities, such as sources of drinking water, usual cooking fuel, sources of fuel for lighting and type of toilets. Similarly, the census also collected information on possession of some consumer durable goods like radios and televisions. The census of 2011 used two sets of questionnaires, as in the previous census, and the first set was used for complete enumeration. All questions related to household facilities and possession of durable consumer goods, were placed in the first set. Therefore information on these topics was derived from complete enumeration in 2011, whereas it was from a sample enumeration in 2001.

Some national surveys also collected information on household facilities and possession of consumer durable goods, such as the Nepal Living Standard Survey and the Nepal Demographic and Health Surveys. But this analysis is mainly based on the two population censuses of 2001 and 2011. In the analysis, some surveys data are used to see trends of coverage of these facilities. For this purpose, data of two surveys are presented here, the Nepal Labour Force Survey (NLFS) 2008 and the Annual Household Survey 2012/13.

8.3 Source of drinking water

Access to water is an essential aspect of the good health of people and the economic development of the country. It is mentioned in the Interim Constitution of 2007, Nepal, that access to water is a fundamental right of people (cited in Nepal MDGs Progress Report 2013, p.91). So, the government of Nepal has given top priority to its development. The Thirteenth Three Year Plan has set a goal to achieve universal access to basic drinking water by 2017.

Households collect water for drinking and cooking purposes from different sources. The sources may vary with seasons and also differ by location. In both population censuses of 2001 and 2011, information was collected only on usual sources of water for drinking and cooking purposes of households. So, it referred to only the main and usual source of water for these purposes. Both censuses used the same option categories for the source of drinking water for enumeration. Definitions of all these categories were similar in both censuses and these definitions were:

- Tap/piped water was defined as a source of drinking water for households that was connected either by metal or polythene pipeline to in-house, house compounds or outside, that might be distributed by government or community organisations. Private or personal piped was also included in this category of drinking water source.
- Tube-well/Hand-pump was an underground water source. It was used for drinking and cooking by households and water was delivered from using tube-well, borehole, jet-pump, roar-pump, etc.
- Well referred to an underground source of water, i.e., a well or Kuwa. In the 2011 census, this was divided into two categories - covered and uncovered. If the source of water was covered to protect it from bird droppings and animals falling into it and it was also protected from surface run-off water, such type of water source was categorised as a covered well. If there was no protection over the well or Kuwa from bird droppings and surface water run-off, the source was in the uncovered category.
- Spout water was a kind of spring that referred to drinking water sources like Spout, Pandhero, Stone Tap, etc. It might be protected or unprotected from water contamination.
- River/Stream referred to run-off water sources like rivers streams, irrigational canals, kulos, kholas, etc.
- Others category referred to all remaining sources of water that were not included in the above mentioned categories like lakes, ponds, tankers, jars, bottles, etc.

8.3.1 National level

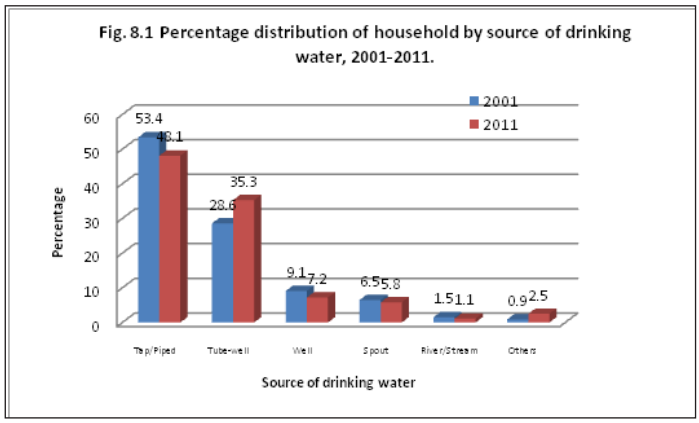


Table 8.1 shows the percentage distribution of household by type of water source in censuses and surveys in different years. Tap/piped is, generally, regarded as an improved source of drinking water. The percentage distribution of this decreased in the last census compared to 2001. However, it was higher than the percentage shown in the Nepal Labour Force Survey (NLFS) 2008 and slightly lower than that of the Annual Household Survey 2012/13, so there was an increasing trend. According to census of 2011, nearly 50 % of households used tap/piped as their usual source of drinking water. The share of tube-well increased in 2011 (35.3%) compared to 2001 (28.6%). Tube-well is also regarded as an improved water source. On the other hand, the percentage of well as a source of drinking water declined by 1.9 percentage points during the intercensal period. Covered wells are also considered as safe drinking water sources and the share of these as a source of drinking water was low.

Similarly, the percentages were slightly lower in spout and river/stream in 2011 compared to 2001. The percentage in 'Others' category increased to 2.5% in 2011, whereas it was only 0.9% in 2001. It can be argued that households were forced to use alternative sources (tankers, jars and bottles) due to irregular and inadequate supplies of tap/piped water. This type of situation was observed more in urban areas. Therefore, the percentage of households using 'Others' source was higher in urban than rural areas in 2011 (see Table 8. 2).

Table 8.1: Percentage of household by source of drinking water, Nepal, 2001- 2012/13.

Source	Percentage distribution			
	Census 2001	NLFS 2008	Census 2011	AHS 2012-13
Tap/Piped	53.4	45.0	48.1	49.5
Tube-well	28.6	39.1	35.3	38.1
Well	9.1	3.6	7.2	6.1
Covered	-	-	2.5	1.3
Uncovered	-	-	4.7	4.8
Spout	6.5	9.6	5.8	-
River/Stream	1.5	-	1.1	-
Others	0.9	2.7	2.5	11.6*
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	37,489	-	33,900	
Total Household	**4,177,757**	**15,976**	**5,423,297**	**2,985**

**It includes Spout and River/Stream.*

Source: Central Bureau of Statistics (2003), Population Monograph of Nepal vol. I, Housing and Household Characteristics and Family Structure, Kathmandu, Nepal.

8.3.2 Urban/rural

Tap/piped water was the prime source of drinking water in urban areas in both censuses as shown in table 8.2. The coverage of this source was about 60 % in urban areas in 2011, which was lower than that of the 2001 census. Similarly the coverage of tap/piped in rural areas declined during the same period. Due to the insufficient supply of tap/piped water, people had to use alternative sources of drinking water. As alternative sources, households used tube-wells, wells, tankers, jars, bottles etc. The percentage of households using tube-wells increased in the 2011 census in both urban and rural areas. The increment of percentage points of this water source was more in rural areas compared to urban.

The use of wells for drinking water also decreased in 2011 in both urban and rural areas. In 2011, data on well water as a source of water was separated into two categories, and among these, covered wells were more popular in urban areas. Inversely, the percentage of uncovered wells was more popular in rural areas. In the case of spout water sources, the percentage declined in both urban and rural areas during the intercensal period. The percentage using this source was obviously more in rural compared to urban areas. This type of scenario was also observed in river/stream water sources. Users of 'Others' category of water sources remarkably increased in 2011 in urban areas. As stated earlier, this was caused by the increasing use of alternative drinking water sources like tankers, jars and bottles in urban areas.

Table 8.2: Percentage of household by source of drinking water for urban/rural residence, Nepal, 2001- 2011.

Source	Urban		Rural		Total	
	2001	**2011**	**2001**	**2011**	**2001**	**2011**
Tap/Piped	66.1	59.6	51.1	45.3	53.4	48.1
Tube-well	23.3	24.7	29.6	37.9	28.6	35.3
Well	5.9	5.1	9.7	7.7	9.1	7.2
Covered	-	3.4	-	2.2	-	2.5
Uncovered	-	1.7	-	5.5	-	4.7
Spout	3.3	2.9	7.0	6.5	6.5	5.8
River/Stream	0.5	0.3	1.7	1.3	1.5	1.1
Others	0.9	7.4	0.9	1.3	0.9	2.5
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	5,919	7,682	31570	26218	37489	33900
Total Household	**664,507**	**1,045,575**	**3,509,950**	**4,377,722**	**4,174,457**	**5,423,297**

Source: Central Bureau of Statistics (2003), Population Monograph of Nepal vol I, Housing and Household Characteristics and Family Structure, Kathmandu, Nepal.

Central Bureau of Statistics (2012). National Population and Housing Census 2011, National Report, Kathmandu, Nepal.

Table 8.3: Percentage of household by source of drinking water for urban/rural Kathmandu Valley, 2001- 2011.

Source	Urban		Rural		Total	
	2001	2011	2001	2011	2001	2011
Tap/Piped	83.2	66.3	83.2	64.2	83.2	65.4
Tube-well	6.6	5.8	2.3	7.2	5.0	6.3
Well	6.2	6.4	10.1	12.7	7.7	8.8
Covered	-	5.5	-	10.1	-	7.3
Uncovered	-	0.9	-	2.6	-	1.5
Spout	3.1	2.8	3.6	7.0	3.3	4.5
River/Stream	0.0	0.0	0.2	0.7	0.1	0.3
Others	0.8	18.9	0.5	8.3	0.7	14.6
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	1,362	2,751	783	1,917	2,145	4,668
Total Household	**218,322**	**366,255**	**127,240**	**247,351**	**345,562**	**613,606**

Source: Central Bureau of Statistics (2012). National Population and Housing Census 2011, National Report, Kathmandu, Nepal. Central Bureau of Statistics (2002). Population Census 2001, National Report, Kathmandu, Nepal.

8.3.3 Kathmandu Valley

There are five urban areas within three districts of the Kathmandu Valley. Kathmandu Metropolitan is the capital city of Nepal. So, the percentage distribution of households by source of drinking water might be different from other parts of the country. Table 8.3 shows the distribution of households in Kathmandu Valley by source of drinking water for urban and rural areas. Tap/piped was the major source of drinking water in the Kathmandu Valley. About 83% of households used this as their usual source of drinking water in 2001 in both urban and rural areas. However, this dropped to about 60% in 2011. As a result, households in Kathmandu Valley involuntarily shifted to other sources like well, tube-well, tanker, jar etc. Use of tube-well did not change significantly in urban areas during the decade. In rural areas of valley, this increased to 7.2% in 2011 from 2.3% in 2001. Well as a source of drinking water increased by a slight percentage point in rural areas whereas it was almost same percentage in urban areas. It is noted here that covered wells are becoming more popular in both urban and rural areas of the Kathmandu Valley. The percentage of spout water coverage increased in rural areas, but decreased in urban. It is obvious that the percentage of households using rivers/streams as a source of water was nil in urban areas of the valley in both censuses. There were also very few households using this as their source of drinking water in rural areas. In urban, 'Others' category, which included tanker, jar and bottle water increased to 18.9% in 2011 from 0.8% in 2001. It also increased in rural areas by 7.8 percentage points between the two censuses.

8.3.4 Ecological zone

Ecologically, there were variations in sources of drinking water in both censuses. The disparity is presented in Table 8.4. Tap/piped was the major source of water in households of Mountain and Hill in both censuses, at more than 70% in these zones in 2011. In Tarai, the coverage of tap/piped water was lower than tube-well in both censuses. The source declined by 11.6 percentage points during the intercensal period. On the other hand, tube-well was the primary source of drinking water in Tarai. It increased by 13.5 percentage points in 2011. With the exception of tube-well, the percentage of all other sources of drinking water such as tap/piped, wells, spout, rivers/streams, etc. decreased in 2011 compared to 2001 in Tarai. Tube-well is popular in the Tarai zone due to its

geo-physical features. However, it is not a feasible source of drinking water in the Mountain zone; the percentage of household using it in this zone was zero. In Hill, around 3 % of households were using tube-well as their usual source of drinking water in 2011.

Table 8.4 shows that the percentage of households using wells as their source of water declined in all three ecological zones in 2011 compared to 2001. Comparatively, it was high in Hill among ecological zones in both censuses. Similarly, Mountain had a higher percentage of households using spout as their source of drinking water, followed by Hill. In Tarai, the coverage of this water source was negligible (less than one). Again, river/stream water was also less than 1% in Tarai, but it was 2.6% and 1.6% in Mountain and Hill respectively in 2011. The coverage of it decreased in all three ecological zones during the intercensal period. In Hill, 'Others' source of drinking water was observed at 3.9% in 2011 whereas it was not a significant source of water in Mountain in both censuses.

Table 8.4: Percentage of household by source of drinking water for ecological zones, 2001- 2011.

Source	Mountain		Hill		Tarai	
	2001	**2011**	**2001**	**2011**	**2001**	**2011**
Tap/Piped	72.7	76.9	72.7	72.4	31.1	19.5
Tube-well	0.0	0.0	2.5	3.1	59.3	72.8
Well	6.3	3.8	12.1	9.7	6.6	5.2
Covered	-	0.7	-	3.5	-	1.7
Uncovered	-	3.1	-	6.2	-	3.5
Spout	17.2	16.2	10.2	9.3	1.1	0.7
River/Stream	3.5	2.6	2.0	1.6	0.6	0.5
Others	0.4	0.5	0.5	3.9	1.4	1.3
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	1,837	1,857	14,380	13,091	21,332	18,952
Total Household	**285,217**	**363,698**	**1,950,345**	**2,532,041**	**1,938,895**	**2,527,558**

Source: Same as in Table 8.2.

8.3.5 Development region

Table 8.5 presents the distribution pattern of sources of drinking water for the five development regions of the country. The percentage of households using tap/piped decreased in all development regions during the intercensal period. Though it was decreased, coverage still showed that it was a major source of water except in the Eastern region. In Eastern region, a higher coverage of tube-well was observed, followed by tap/piped, well and spout. The coverage of tube-well increased not only in Eastern region but also increased in other development regions during the intercensal period. Among regions, the highest percentage point increment of tube-well coverage was observed in Far-Western region, followed by Western and Mid-Western regions.

Table 8.5: Percentage of household by source of drinking water for Development Regions, 2001- 2011.

Water Source	Census Year	Development Regions					
		Eastern	Central	Western	Mid-Western	Far-Western	Total
Tap/Piped	2001	35.6	58.3	69.3	52.0	47.0	53.4
	2011	36.3	48.4	64.7	47.8	40.5	48.1
Tube-well	2001	48.7	28.4	14.0	17.5	23.4	28.6
	2011	53.1	33.9	22.3	24.6	40.1	35.3
Well	2001	9.3	8.6	9.0	11.5	7.9	9.1
	2011	5.4	8.2	6.0	11.1	5.0	7.2
Covered	2001	-	-	-	-	-	-
	2011	0.8	3.7	2.1	3.1	1.6	2.5
Uncovered	2001	-	-	-	-	-	-
	2011	4.6	4.5	3.9	8.0	3.4	4.7
Spout	2001	4.7	3.3	5.5	14.3	16.0	6.5
	2011	3.6	3.7	5.6	12.6	10.3	5.8
River/Stream	2001	1.0	0.6	1.1	4.0	3.6	1.5
	2011	0.7	0.6	0.7	2.9	2.8	1.1
Others	2001	0.7	0.7	1.1	0.7	2.1	0.9
	2011	0.9	5.3	0.7	0.9	1.2	2.5
Total Percentage		**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	2001	6,756	13,994	6,401	5,483	4,855	37,489
	2011	6,613	16,163	5,092	3,304	2,728	33,900
Total Household	**2001**	**1,001,121**	**1,465,753**	**863,045**	**479,009**	**365,529**	**4,174,457**
	2011	**1,230,743**	**1,962,238**	**1,065,599**	**695,014**	**469,703**	**5,423,297**

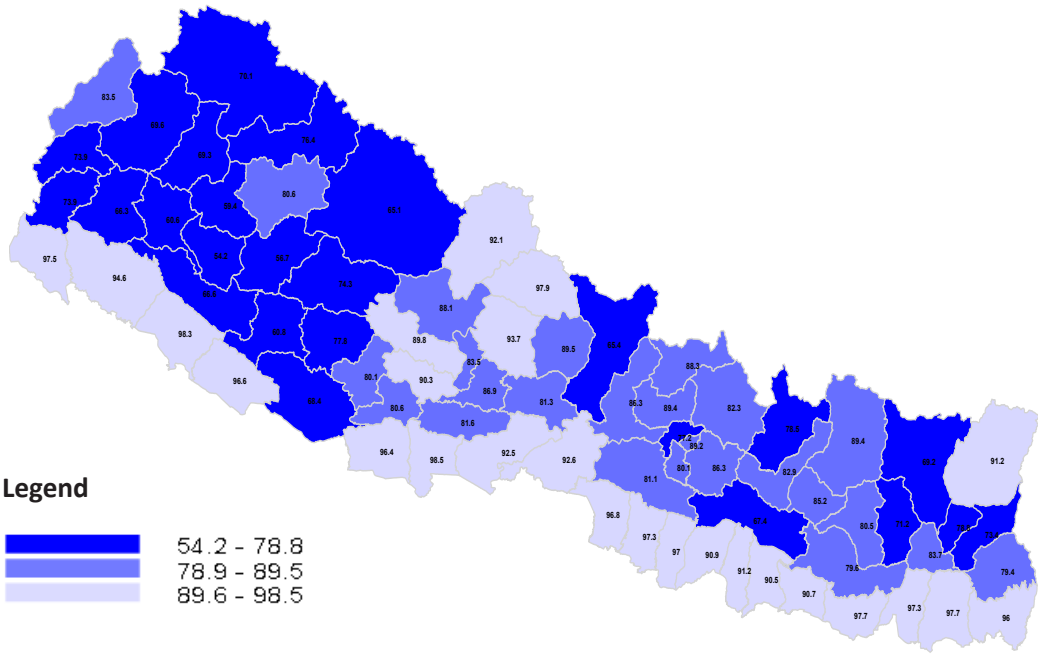
Source: Same as in Table 8.2

The coverage of well, spout and river/stream also decreased in all development regions between censuses. However, the percentage of 'Others' as a source of drinking water increased to 5.3% in the Central region. The Central region has more proportion of urban households. As mentioned above, urban households used alternative sources like tankers, jars and bottles due to inadequate supplies from tap/piped.

8.3.6 Improved source of drinking water

Safe drinking water is an important element for good health and public sanitation. Generally, tap/piped, tube-well and covered wells are regarded as safe or improved sources of water, and it is assumed that there is a low probability of contamination. So, households using tap/piped, tube-well and covered wells as their source of drinking water are grouped into improved source. This is related to Indicator 30 of the Millennium Development Goals (MDGs). The target of the MDG is that the percentage of the population using improved drinking water facilities will reach 73% by 2015 (Nepal MDGs Progress Report 2013). Table 8.6 presents the changes in distribution of household by use of improved source of drinking water between the two censuses. The census of 2011 showed that the coverage reached up to 85.9%. Again, there was no remarkable disparity between urban and rural access by improved drinking water sources. Ecologically, it was highest in Tarai (94%) and below the national average in both Mountain (77.6%) and Hill (79.0%). In Tarai, the high figure was mainly attributed to the coverage of tube-wells. The coverage of improved water source was observed above the national average in three development regions, except in Mid and Far-Western regions.

Fig. 8.2: Proportion of household using improved source of drinking water, Nepal, 2011



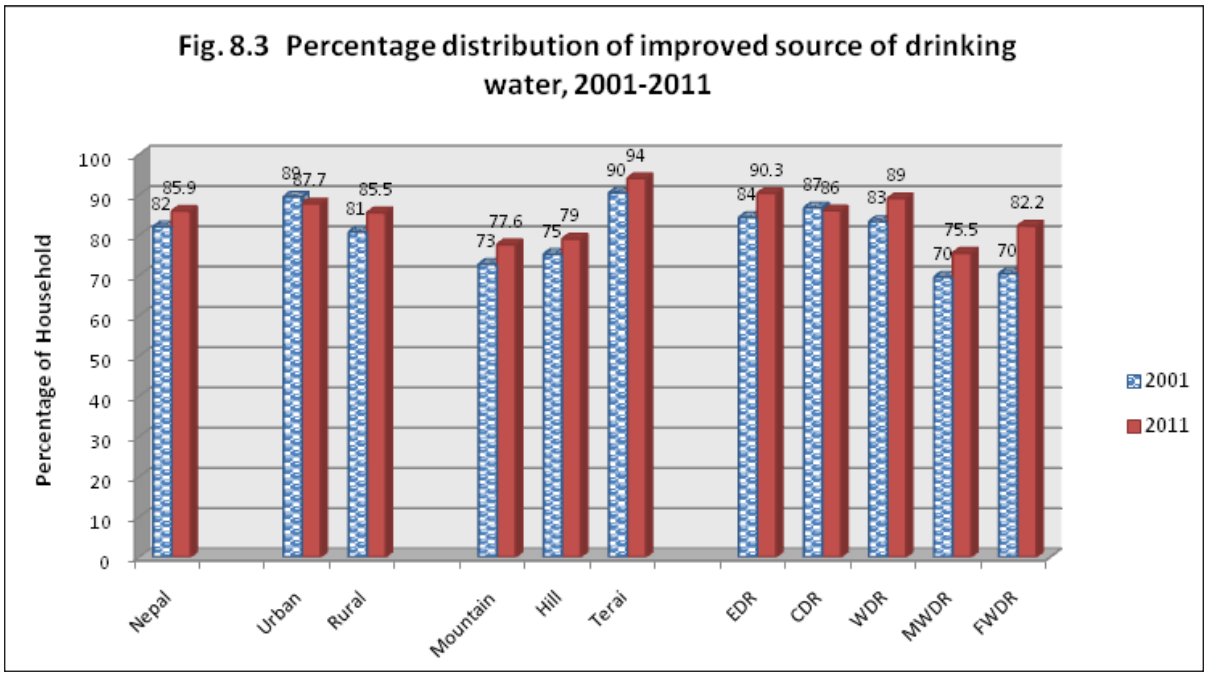
The district with the highest coverage of improved source of drinking water was Rupandehi (98.5%), followed by Bardia (98.3%) and Manang (97.9%) in 2011. Similarly, the lowest coverage was observed in Dailekh (54.2%), followed by Jajarkot (56.7%) and Kalikot (59.4%). Among 75 districts, 44 districts were below the coverage of the national average (Annex I).

Table 8.6: Percentage of household by improved source of drinking water and sex of household head, Nepal, 2011.

Residence	Improved source of drinking water used (%)		Sex of household's head by used of improved source of drinking water			
			Male		Female	
	2001	2011	Household	Percent	Household	Percent
Nepal	82.0	85.9	4,027,336	86.2	1,395,961	85.1
Urban	89.4	87.7	751,279	88.0	294,296	87.0
Rural	80.7	85.5	3,276,057	85.8	1,101,665	84.6
Mountain	72.7	77.6	280,490	77.3	83,208	78.7
Hill	75.2	79.0	1,761,301	78.6	770,740	79.8
Tarai	90.4	94.0	1,985,545	94.1	542,013	93.6
EDR	84.3	90.3	927,283	90.5	303,460	89.6
CDR	86.7	86.0	1,541,581	86.5	420,657	83.9
WDR	83.3	89.0	693,974	89.7	371,625	87.9
MWDR	69.5	75.5	516,122	75.0	178,892	77.0
FWDR	70.0	82.2	348,376	82.6	121,327	81.3

Source: Central Bureau of Statistics (2012). National Population and Housing Census, National Report, and re-tabulation from digital data.

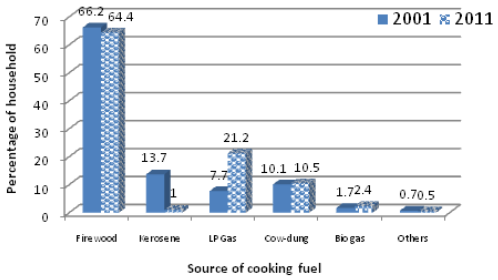
Note: EDR = Eastern Development Region; CDR = Central Development Region; WDR= Western Development Region; MWDR = Mid-western Development Region; and FWDR= Far-western Development Region.



8.3.7 Gender disparity in source of drinking water

The activity of fetching water is mainly undertaken by women in Nepalese society. Female members of households spend a lot of time in the management of water. Thus, it can be assumed that the percentage of improved source of drinking water might be varied by sex of household head. Table 8.6 shows the gender disparity in use of improved source of drinking water. It was observed that there was only one percentage point difference between sexes of household heads in the context of access to improved sources of drinking water. A slightly higher percentage of improved drinking water sources were observed in households with male heads compared to that of females. This situation was found in both rural and urban areas. Ecologically, the percentage point difference was slightly more in households with female heads in Hill and Mountain zones. This situation also prevailed in Mid-Western Development Region. This indicates there was no substantial disparity in the use of improved source of drinking water between sexes of household heads.

Fig. 8.4 Percentage distribution of household by usual source of cooking fuel, 2001-2011



8.4 Usual source of cooking fuel

Nepal depends heavily on traditional sources of energy for cooking in households. The major energy resources used for cooking purpose in households are biomass, petroleum products, agricultural residue and cow-dung. Population censuses have collected information on the source of energy for cooking in households since 2001. In both the 2001 and 2011 censuses, the categories of cooking fuel were almost similar and their definitions were also the same. For census enumeration purposes, cooking fuel referred to material that was the main used fuel in households. There were seven categories of main fuel in 2011, wood/firewood, kerosene, LP gas, cow-dung, biogas, electricity and others. But, electricity was not a separate category in 2001 and was included in the 'Others' category. 'Others' category referred to straw, leaves and other agricultural residue.

8.4.1 National level

Table 8.7 shows the percentage distribution of households by usual cooking fuel in different censuses and surveys. Wood/ firewood is the energy source mainly used for cooking in Nepal. Although it was the leading source of energy for cooking, as shown in censuses and surveys, this is a slightly decreasing trend. Kerosene was observed as the second major source of cooking fuel in 2001. Its share has sharply declined during the intercensal period. Inversely, the coverage of LP gas has increased significantly during the decade. In 2001, LP gas was in fourth position as a source of fuel and moved to second place in 2011. Due to the increasing price of kerosene, many users have shifted to LP gas, which is more efficient and easy to use.

Table 8.7: Percentage of household by main source of fuel for cooking, Nepal, 2001- 2012/13.

Main source of fuel for cooking	Percentage distribution			
	Census 2001	NLFS 2008	Census 2011	AHS 2012-13
Wood/firewood	66.2	68.4	64.4	62.8
Kerosene	13.7	1.4	1.0	0.2
LP Gas	7.7	12.3	21.2	22.4
Cow-dung	10.1	10.7	10.5	9.6
Bio gas	1.7	2.4	2.4	2.4
Others	0.7	4.8	0.5	2.6
Total Percentage	100.0	100.0	100.0	100.0
Not Stated	37,116	-	34,973	-
Total Household	4,174,457	15,976	5,423,297	2,985

Source: Same as in Table 8.1.

Cow-dung is a traditional source of energy for cooking in households and it constituted 10.1% in 2001. The share of cow-dung has not changed remarkably during the intercensal period. Use of biogas for cooking increased over the decade, but the share was very low in both censuses. There was a separate category of information on electricity as a source of cooking fuel in 2011 and the percentage of it was negligible. There was no significant change in percentage of 'Others' as a source of fuel during the census decade. Similar observations were found in the results of surveys including the Nepal Labour Force Survey, 2008 and the Annual Household Survey, 2012/13.

8.4.2 Urban/rural

Urban/rural distribution of household by type of cooking fuel is presented in Table 8.8. There was a substantial disparity in usual energy source for cooking among urban and rural areas. Firewood was the main source of cooking fuel in rural areas in both censuses whereas this was not the case in urban areas. The coverage of firewood declined in urban areas in 2011. The use of kerosene as a cooking energy, a major source in 2001, drastically declined to 2.0% in urban areas in 2011. A similar scenario was also observed in rural areas. However, the use of LP gas increased in both urban and rural areas during the intercensal period. In 2011, LP gas was in first place (68.2%) for urban cooking energy. Simultaneously it also increased in rural areas. Therefore, it can be argued that most kerosene using households shifted to LP gas. Cow-dung slightly increased in rural areas whereas it declined in urban. It was the second major source of cooking energy in rural Nepal whereas there was a very low percentage coverage in urban areas. There was a constant situation of biogas users in urban areas during intercensal period, but, users of it doubled in rural areas during the same period.

Table 8.8: Percentage of household by main source of cooking fuel for urban/rural residence, Nepal, 2001- 2011.

Main source of fuel for cooking	Urban		Rural		Total	
	2001	2011	2001	2011	2001	2011
Wood/firewood	33.2	25.9	72.4	73.6	66.2	64.4
Kerosene	34.1	2.0	9.8	0.8	13.7	1.0
LP Gas	27.3	68.2	4.0	10.0	7.7	21.2
Cow-dung	2.5	1.5	11.5	12.6	10.1	10.5
Bio gas	1.8	1.8	1.7	2.6	1.7	2.4
Others	1.0	0.5	0.6	0.5	0.7	0.5
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	6,031	8,009	31,085	26,964	37,116	34,973
Total Household	**664,400**	**1,045,575**	**3,510,057**	**4,377,722**	**4,174,457**	**5,423,297**

Source: Same as in Table 2

8.4.3 Kathmandu valley

The scenario of energy used for cooking in households of the Kathmandu Valley is presented in Table 8.9. LP gas was the major energy source for cooking in 2011, whereas kerosene was observed as the main fuel in 2001. LP gas increased from 28% in 2001 to 85% in 2011 in the valley. However, the use of kerosene declined to 2.9% in 2011. The percentage of firewood users also declined by 50% between the two censuses.

LP gas was the main energy source of cooking in urban areas of Kathmandu valley. Its coverage was more than 90% in urban areas of the valley. Previously kerosene was the major source of energy for cooking but this declined by 3.1% in 2011. Cow-dung and biogas using households were not seen in urban areas of the valley and there were also very negligible percentage users in rural areas of the valley.

Table 8.9: Percentage of household by main source of cooking fuel for urban/rural Kathmandu Valley, 2001- 2011.

Main source of fuel for cooking	Urban		Rural		Total	
	2001	2011	2001	2011	2001	2011
Wood/firewood	5.1	3.1	53.3	24.0	22.8	11.5
Kerosene	50.0	3.1	39.2	2.6	46.0	2.9
LP Gas	42.9	93.2	2.3	72.7	28.0	85.0
Cow-dung	0.1	-	0.4	0.1	0.2	0.1
Bio gas	0.1	-	0.3	0.3	0.2	0.1
Others	1.7	0.5	4.5	0.4	2.8	0.5
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.1**
Not Stated	1,437	2,948	892	1,997	2,329	4,945
Total Household	**218,322**	**366,255**	**127,240**	**247,351**	**345,562**	**613,606**

Source: Same as in Table 8.3

8.4.4 Ecological zone

There was a clear disparity in energy sources of cooking among ecological zones, presented in Table 8.10. Firewood was the main cooking fuel in mountain zones in both censuses, covering about 95% of households. In Mountain Zone, kerosene was used by 3.2% of households for cooking in 2001, which declined to less than 1% in 2011. On the other hand, the use of LP gas increased to 3.1 % from 0.4% during the intercensal period. In Hill zone, the energy used for cooking was slightly different from that of Mountain. The coverage of firewood was higher among different sources of fuels, followed by kerosene and LP gas in Hill. Cow-dung and biogas were used by a very low percentage of households. Although firewood was the major energy source in Hill; it has declined by 4.9 percentage points in a decade. Similarly, the use of kerosene also decreased to 1% in 2011. During the intercensal period, LP gas has become the more popular energy source in Hill, increasing by 20.6 percentage points. A different picture on the use of energy sources for cooking was observed in Tarai. In this zone, kerosene drastically decreased over the decade. Cow-dung was widely used after firewood as a source of energy. LP gas jumped to the third type of energy source used and biogas was also becoming more popular in this zone.

Table 8.10: Percentage of household by main source of cooking fuel for ecological zones, 2001- 2011.

Main source of fuel for cooking	Mountain		Hill		Tarai	
	2001	2011	2001	2011	2001	2011
Wood/firewood	95.5	95.3	72.3	67.4	55.6	57.0
Kerosene	3.2	0.6	16.0	1.1	12.8	1.0
LP Gas	0.4	3.1	8.9	29.5	7.7	15.4
Cow-dung	0.7	0.4	0.1	0.1	21.5	22.3
Bio gas	0.1	0.2	1.9	1.6	1.7	3.6
Others	0.2	0.4	0.8	0.3	0.7	0.7
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	1,880	1,909	1,470	13,562	20,446	19,502
Total Household	**285,229**	**363,698**	**1,950,822**	**2,532,041**	**1,938,407**	**2,527,558**

Source: Same as in Table 8.2.

8.4.5 Development region

Table 8.11 shows the disparity of cooking fuel used among the five development regions. More than 50% of households used firewood for cooking in all development regions in both censuses. The use of this energy source decreased in 2011 compared to 2001 in Eastern and Central regions, whereas it increased in Far and Mid-Western regions during this period. In Far-western region, around 90% of households used it as their cooking energy. However, the use of kerosene sharply declined in all development regions during the intercensal period. On the contrary, LP gas was becoming more popular in all regions and was second as an energy source after firewood. In Eastern region, cow-dung was an important energy source after firewood. The percentage of households using cow-dung was high in eastern compared to western parts of the Tarai. Less than 1% of households used cow-dung for cooking in the Far-Western region whereas it was about 20% in Eastern region. In regard to the use of biogas for cooking, the percentage increased in all development regions in 2011. The highest percentage of households using biogas were observed in the Western region, followed by Far-western and Eastern regions.

Table 8.11: Percentage of household by main source of cooking fuel for Development Regions, 2001- 2011.

Main source of fuel for cooking	Census Year	Development Regions					
		Eastern	Central	Western	Mid-western	Far-western	Total
Wood/firewood	2001	66.3	55.6	65.3	81.0	90.8	66.2
	2011	61.2	50.7	65.7	88.2	91.6	64.4
Kerosene	2001	9.9	19.3	13.1	11.3	5.5	13.7
	2011	1.0	1.6	0.7	0.4	0.5	1.0
LP Gas	2001	4.3	11.2	10.3	4.3	1.9	7.7
	2011	13.7	34.2	22.1	7.8	4.2	21.2
Cow-dung	2001	17.7	11.4	7.6	2.1	0.1	10.1
	2011	20.9	11.1	7.6	1.5	0.2	10.5
Bio-gas	2001	1.2	1.2	3.4	1.1	1.5	1.7
	2011	2.6	1.7	3.6	2.0	3.4	2.4
Others	2001	0.6	1.3	0.3	0.2	0.3	0.7
	2011	0.7	0.7	0.3	0.1	0.2	0.5
Total Percentage	**2001 2011**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	2001	6,543	14,069	6,641	5,466	4,397	37,116
	2011	6,817	16,785	5,239	3,387	2,745	34,973
Total Household	**2001**	**1,000,362**	**1,465,813**	**863,049**	**479,817**	**365,417**	**4,174,457**
	2011	**1,230,743**	**1,962,238**	**1,065,599**	**695,014**	**469,703**	**5,423,297**

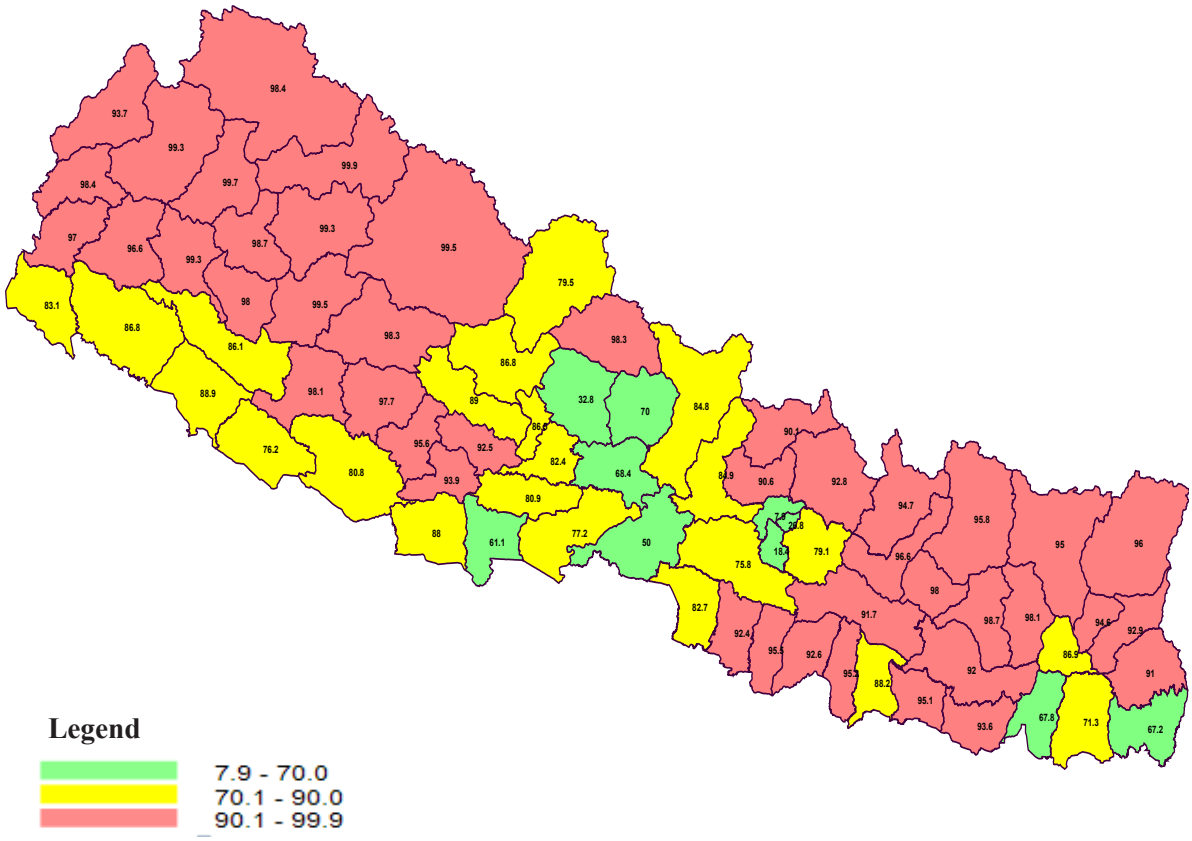
Source: Same as in Table 8.2

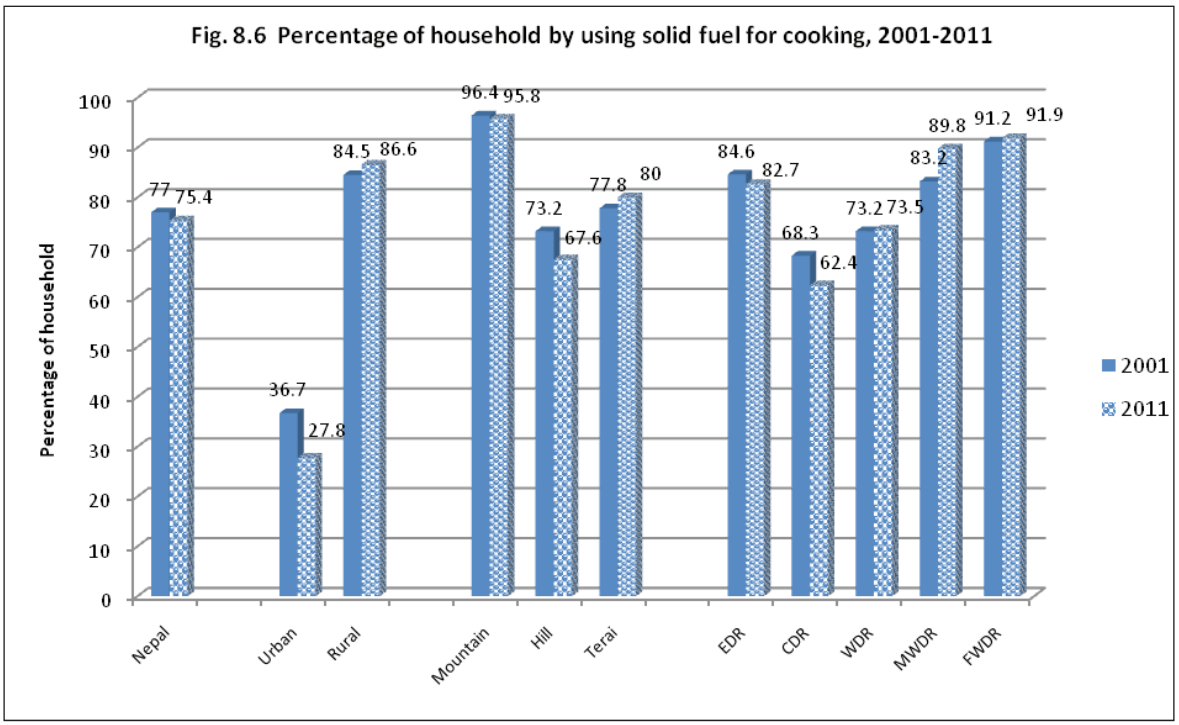
8.4.6 Solid fuel

There is an inverse relation between the use of solid fuel for cooking and the economic status as well as the quality of life of households. Solid fuel refers to biomass such as wood, cow-dung, leaves, agricultural residue etc. The use of this fuel produces indoor pollution and leads to health problems, such as acute respiratory diseases, of household members, especially women and children. MDG indicator 29 refers to the proportion of the population using solid fuels as the primary source of domestic energy for cooking. For analysis purposes, firewood, cow-

dung and 'Others' categories of census options were grouped together to form the solid fuel category. The census of 2011 showed that 75.4% of households were using solid fuel for cooking and there was a slight improvement in the coverage of it in 2011 compared to the previous census of 2001 (77.0%). There was wide disparity in the use of solid fuel between urban and rural households. In the context of solid fuel use, some progress was observed in urban households. The percentage of solid fuel dropped to 27.8% in 2011 from 36.7% in 2001. There was also a wide disparity among ecological zones in the coverage of solid fuel. The lowest percentage was observed in Hill (67.6%) while it was highest in Mountain (95.8%). Similarly, Far-Western region had the highest percentage use of solid fuel, followed by Mid-Western and Eastern regions. The lowest percentage was found in Central region (62.4%) in 2011.

Fig. 8.5 Proportion of household using solid fuel for cooking, Nepal, 2011





The highest proportion of households that used solid fuel for cooking was observed in Mugu (99.9%), followed by Bajura (99.7%), Dolpa (99.5%) and Jajarkot (99.5%) in 2011. Similarly, the lowest proportion that used solid fuel was in Kathmandu (7.9%), followed by Lalitpur (18.4%) and Bhaktapur (26.8%). There were 64 districts that had a higher percentage than the national average (75.4%) in using solid fuel for cooking (Annex I). Therefore, progress has yet to be made to achieve the MDG target (Indicator 29).

8.4.7 Gender disparity in coverage of solid fuel for cooking

In Nepalese society, mainly women are involved in collecting solid fuel and cooking activities. Women and children are exposed primarily to indoor pollution produced by the use of solid fuel in households, and so they are at greater risk of respiratory diseases. It is interesting to see the differences in the use of solid fuel by gender perspective. Table 8.12 shows the differences in use of solid fuel by sex of household head. In 2011, households having a female head generally used a lower percentage of solid fuel for cooking compared to households with a male head. At the national level, there were 3.8 percentage point differences between male and female household heads in the use of solid fuel for cooking. This type of trend was also observed in urban and rural cases. However, coverage differed in ecological zones. There was no significant variation in the use of solid fuel by sex of household heads in Mountain and Hill zones. In Tarai, the percentage was lower by 7.7 percentage points in households with female heads compared to households with male heads. Solid fuel users were slightly more in households having female heads compared to those with male heads in Far-Western region only. The highest percentage points difference was seen in Central region in the use of solid fuel between sexes of household heads, followed by Eastern and Western regions.

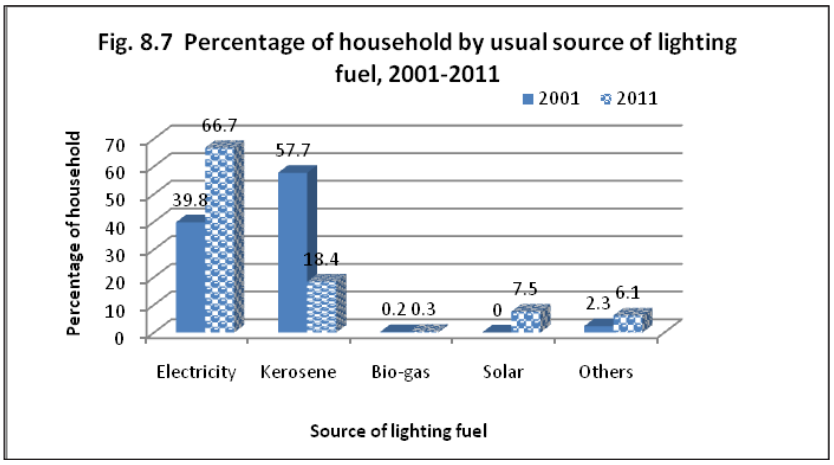
Table 8.12: Percentage of household by using solid fuel for cooking and sex of household head, Nepal, 2011.

Residence	Solid fuel used for cooking (%)		Sex of household head by using solid fuel for coking			
			Male		Female	
	2001	2011	Household	Percent	Household	Percent
Nepal	77.0	75.4	4,027,336	76.5	1,395,961	71.7
Urban	36.7	27.8	751,279	28.6	294,296	25.9
Rural	84.5	86.6	3,276,057	87.5	1,101,665	84.0
Mountain	96.4	95.8	280,490	96.0	83,208	95.1
Hill	73.2	67.6	1,761,301	67.6	770,740	67.7
Tarai	77.8	80.0	1,985,545	81.6	542,013	73.9
EDR	84.6	82.7	927,283	83.7	303,460	79.5
CDR	68.3	62.4	1,541,581	64.9	420,657	53.3
WDR	73.2	73.5	693,974	74.8	37,1625	70.9
MWDR	83.2	89.8	516,122	90.2	178,892	88.7
FWDR	91.2	91.9	348,376	91.4	121,327	93.6

Source: Same as in Table 8.6.

Note: EDR = Eastern Development Region; CDR = Central Development Region; WDR= Western Development Region; MWDR = Mid-western Development Region; and FWDR= Far-western Development Region.

8.5 Main source of fuel used for lighting



The type of fuel used for lighting reflects the quality of life in households. For example, electric lights support more reading and better education of household members. In the same way, electrification of households enhances home-based economic activities. For example, weaving activities can be undertaken in the late evening in households with electric lights. In the 2001 census, information was collected on the usual source of fuel for lighting in households. Four option categories were used to collect information on the usual source of fuel for lighting in the census; electricity, kerosene, biogas and others. In the census of 2011, there were five option categories. The additional option category was solar power, which was included in the 'Others' category in 2001. Solar power was a more popular energy source for lighting in households especially in remote villages and mountain areas, where electrification in settlements has yet to be accomplished. 'Others' option category included LP gas, batteries, candles, wood etc. In this way, both censuses used similar categories and definitions of usual source of fuel for lighting in households.

8.5.1 National level

Table 8.13 shows the changing scenario of household distribution by usual source of fuel for lighting. Electricity has become a major source of fuel for lighting purposes over the years. The coverage was highest among sources of fuel for lighting in 2011, followed by kerosene, solar and 'Others'. Kerosene had the highest coverage as a source of fuel for lighting in the previous census. The share of kerosene in household lighting drastically decreased during the intercensal period. During this period, many settlements in the country were covered by electricity. On the other hand, 'Tukimara' a battery lamp was more popular in settlements without electricity; 'Tukimara' replaced kerosene lamps in villages and remote areas. Battery lamps were categorised into 'Others' in both censuses. The percentage in this category more than doubled from the last census (6.1%) compared to that of the 2001 census (2.3%), even though solar energy was separated from this category. Solar energy users (7.5%) also increased. However, there was no significant change in biogas use for lighting in households during the intercensal period. A similar scenario was also observed in the data from the Nepal Labour Force Survey 2008 and the Annual Household Survey 2012/13 in the context of usual source of fuel for lighting in households.

Table 8.13: Percentage of household by usual source of fuel used for lighting, Nepal, 2001- 2012/13.

Source of fuel used for lighting	Percentage distribution			
	Census 2001	NLFS 2008	Census 2011	AHS 2012-13
Electricity	39.8	56.1	66.7	76.1
Kerosene	57.7	33.0	18.4	10.2
Bio-gas	0.2	-	0.3	0.0
Solar	-	-	7.5	9.1
Others	2.3	11.0	6.1	4.6
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	41,446	-	35,103	-
Total Household	**4,177,757**	**15976**	**5,423,297**	**2,985**

Source: Same as in Table 8.1.

8.5.2 Urban/rural

Between urban and rural areas, there was a substantial difference in the use of main sources of energy for lighting (see Table 8.14). Most of urban households used electricity for lighting in both censuses. However, there was about an 11 percentage points increase in electricity users for lighting in urban areas during the intercensal period. In 2011, about 95% of urban households used it for lighting at their homes. It is noted that electrification is an essential requirement to be declared as Municipality. Rural electrification has also made progress during the intercensal period. The coverage of electricity in rural areas doubled in 2011 (61.2%) compared to 2001 (31.5%). Electricity had the highest coverage of energy sources, followed by kerosene in urban household lighting in both censuses. Kerosene declined by 12 percentage points during the intercensal period in urban areas and decreased by about 34 percentage points in rural areas over a decade. In 2001, kerosene the first source of lighting fuel in rural areas, moved to second position in 2011. There was no significant coverage of biogas and others energy sources, including solar, in urban areas in both censuses. However, the proportion of solar energy users increased dramatically in rural areas at 9.2% in 2011. Similarly, others category of fuel also increased up to 7.5% from 2.7% during the intercensal period in rural areas.

Table 8.14: Percentage of household by usual source of fuel for lighting for urban/rural residence, Nepal, 2001- 2011.

Source of fuel for lighting	Urban		Rural		Total	
	2001	2011	2001	2011	2001	2011
Electricity	83.4	94.8	31.5	61.2	39.8	66.7
Kerosene	16.2	4.1	65.6	21.8	57.7	18.4
Bio-gas	0.2	0.4	0.2	0.3	0.2	0.3
Solar	-	0.2	-	9.2	-	7.5
Others	0.2	0.5	2.7	7.5	2.3	6.1
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	6,830	8,092	34,616	27,011	41,446	35103
Total Household	**664,507**	**1,045,575**	**3,509,950**	**4,377,722**	**4,174,457**	**5423297**

Source: Same as in Table 8.2.

8.5.3 Kathmandu valley

Kathmandu valley is a densely populated settlement of Nepal. Electricity covers almost all parts of the valley, so virtually all households use electricity for lighting in valley urban areas. Table 8.15 shows the distribution of household by usual source of fuel for lighting in the Kathmandu Valley. Apart from electricity, other sources of fuel used for lighting in the Kathmandu Valley urban areas were less than 1% in both censuses. In the case of rural areas of the valley, the coverage of electricity was also more than 90% in both censuses. In 2001, kerosene was used by 9.3% of rural households for lighting, which dropped to 1.5% in 2011. Biogas and solar were not significant fuels and there were less than 1% of users in both urban and rural areas of Kathmandu Valley.

Table 8.15: Percentage of household by usual source of fuel for lighting for urban/rural Kathmandu Valley, 2001- 2011.

Source of fuel for lighting	Urban		Rural		Total	
	2001	2011	2001	2011	2001	2011
Electricity	98.9	99.1	90.4	97.9	95.8	98.6
Kerosene	0.8	0.4	9.3	1.5	4.0	0.8
Bio-gas	0.2	0.4	0.0	0.4	0.1	0.4
Solar	-	0.0	-	0.1	-	0.1
Others	0.1	0.1	0.2	0.1	0.1	0.1
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	1600	2945	894	2013	2494	4958
Total Household	**218,322**	**366,255**	**127,240**	**247,351**	**345,562**	**613,606**

Source: Same as in Table 8.3.

8.5.4 Ecological zone

Table 8.16 shows that there were substantial differences among the three ecological zones in use of fuel for lighting in both censuses. It is noted here that electricity was the major source of fuel for lighting in all ecological zones in 2011, followed by kerosene. Whereas kerosene was the major source of fuel for lighting in 2001, followed by electricity. Households shifted to electricity from kerosene during the intercensal period. Ecologically, Tarai had made more progress in this shift. Kerosene users heavily reduced in Mountain between the period of the two censuses by about 52.2 percentage points. In Hill and Tarai, kerosene users declined by 41.9 and 34.9 percentage points respectively. In Mountain, the reduction of kerosene users was mainly attributed to an increase in the percentage of electricity and solar power users. In all ecological zones, there was no remarkable change in the use of biogas between the two censuses. Solar energy was more popular, especially in Mountain zone, and its coverage was 20.9% in 2011. Similarly, 11% of households used solar energy in Hill zone in 2011, while this was only 2% in Tarai. The percentage of 'Others' as a source of fuel also increased in all three zones between the two censuses. Such an increment was mainly due to the popularity of battery lamps. It was observed that the increment was low in the Tarai zone.

Table 8.16: Percentage of household by usual source of fuel for lighting for ecological zones, 2001- 2011.

Source of fuel for lighting	Mountain		Hill		Tarai	
	2001	**2011**	**2001**	**2011**	**2001**	**2011**
Electricity	21.4	49.5	43.2	67.6	39.1	70.4
Kerosene	66.3	14.1	53.9	12.0	60.4	25.5
Bio-gas	0.0	0.2	0.2	0.3	0.2	0.3
Solar	-	20.9	-	11.0	-	2.0
Others	12.3	15.3	2.8	9.1	0.3	1.9
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	2,101	1,887	16,588	13,578	22,757	19,638
Total Household	**285,213**	**363,698**	**1,951,191**	**2,532,041**	**1,938,053**	**2,527,558**

Source: Same as in Table 8.2.

8.5.5 Development region

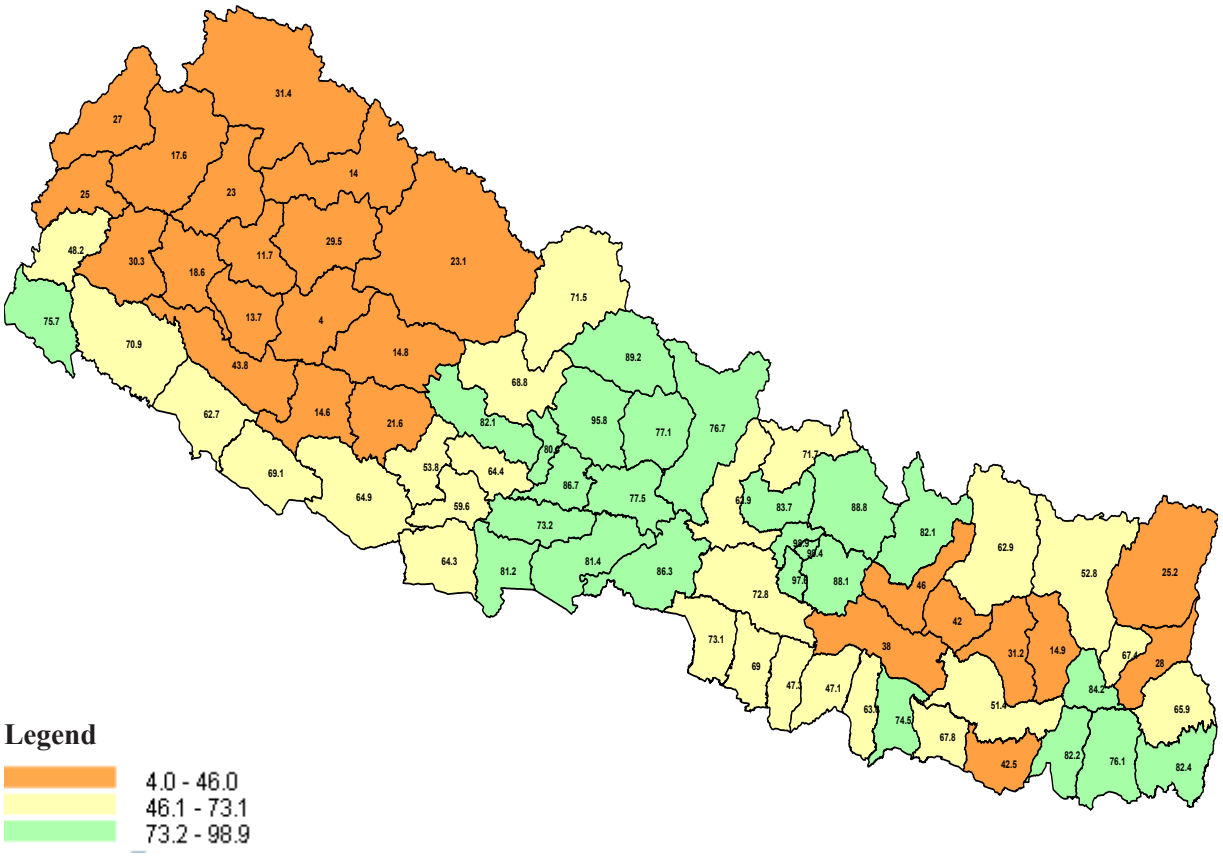
Table 8.17 presents the usual source of fuel for lighting for development regions. The 2011 census showed that electricity was the prominent fuel for lighting in all development regions of the country. It was the second major fuel for this purpose in 2001, except in Central Development Region. Electricity coverage doubled during the intercensal period 2001 – 2011 in Eastern and Far-western regions. It also significantly increased in the three other regions during this period. The highest coverage of electricity was observed in Western region, followed by Central and Eastern regions in 2011. Use of kerosene significantly decreased in 2011 compared to 2001 in all development regions; it was the major source of fuel for lighting in 2001, except in Central region. Between the two censuses, it decreased by the highest percentage point in Far-western region (53.1%), followed by Mid-western (49.8 %), Eastern (42.6%) and Western (41.1%) regions. Biogas was used by less than 1% of households in all development regions in both censuses; there was a minor increment in its users in the census of 2011. Solar energy was observed as an increasing source of lighting in all five development regions in 2011. The highest proportion of solar power users was observed in Mid and Far western regions.

Table 8.17: Percentage of household by usual source of fuel for lighting for Development Regions, 2001- 2011.

Source of fuel for lighting	Census Year	Development Regions					
		Eastern	Central	Western	Mid-western	Far-western	Total
Electricity	2001	30.5	53.2	42.8	25.4	23.1	39.8
	2011	64.0	77.8	78.4	42.5	48.4	66.7
Kerosene	2001	68.6	46.3	56.2	63.6	69.6	57.7
	2011	26.0	17.5	15.1	13.8	16.5	18.4
Bio-gas	2001	0.2	0.2	0.2	0.2	0.2	0.2
	2011	0.4	0.3	0.2	0.2	0.4	0.3
Solar	2001	-	-	-	-	-	-
	2011	7.3	3.2	4.5	20.1	13.8	7.5
Others	2001	0.7	0.3	0.7	10.8	7.1	2.3
	2011	2.4	1.2	1.7	23.3	20.9	6.1
Total Percentage	**2001 2011**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	2001	7,235	15,212	7,718	6,137	5,145	41,446
	2011	6,872	16,821	5,259	3,402	2,749	35,103
Total Household	**2001**	**1,000,441**	**1,465,753**	**863,045**	**479,817**	**365,401**	**4,174,457**
	2011	**1,230,743**	**1,962,238**	**1,065,599**	**695,014**	**469,703**	**5,423,297**

Source: Same as in Table 8.2.

Fig.8.8 Proportion of household having electricity facility for lighting, 2011.



The lowest percentage of household using solar power was found in Central Region (3.2%), followed by Western Region (7.3%). In Mid and Far-western regions, there were more than 20% of households still using 'Others' source of fuel for lighting. This was due to the popularity of battery lamps like 'Tukimaras'. The percentage of this category was observed at around 2% in Eastern, Central and Western regions. There was a wide disparity in electricity coverage for lighting among districts. The lowest coverage was found in Jajarkot (4%), followed by Kalikot (11.7%) and Dailikh (13.7%) in 2011. On the contrary, the highest coverage was found in Kathmandu (98.9%) followed by Bhaktapur (98.4%) and Lalitpur (97.4%). There were still 40 districts that were below the coverage of the national average (66.7 %) (Annex I).

8.5.6 Gender disparity in household lighting fuel

Table 8.18 shows the gender differences in the coverage of different sources of fuel for lighting. Overall, the highest coverage of electricity was found in households having female heads compared to those with male heads. In urban, there was no significant difference in the coverage of electricity between sexes of household heads. This is due to the wide coverage of electricity in urban areas. A higher coverage of electricity was observed in households with female heads compared to those with male heads in rural areas.

There was also gender disparities in the source of fuel used for lighting in households among ecological zones. The coverage of electricity was higher in households having female heads by 9.2 percentage points compared to male heads in Mountain zone. Such patterns were also observed in Tarai and Hill.

There was a disparity in coverage of electricity by sexes of household heads among five development regions. The highest disparity was observed in Mid-western region, followed by Central and Western regions. In Mid-western

region, the electricity coverage was higher in households having female heads than that of male heads by 7.2 percentage points. Such disparity was the lowest in Far-western region.

Table 8.18: Percentage of household by usual fuel for lighting and sex of household head, Nepal, 2011.

Residence	Electricity for lighting		Sex of household head by using electricity for lighting			
			Male		Female	
	2001	2011	Household	Percent	Household	Percent
Nepal	39.8	66.7	4,027,336	66.2	1,395,961	71.9
Urban	83.4	94.8	751,279	94.7	294,296	95.3
Rural	31.5	6.2	3,276,057	59.7	1,101,665	65.6
Mountain	21.4	49.5	280,490	47.4	83,208	56.6
Hill	43.2	67.6	1,761,301	66.5	770,740	70.4
Tarai	39.1	70.4	1,985,545	68.7	542,013	76.4
EDR	30.5	64.0	927,283	63.0	303,460	66.9
CDR	53.2	77.8	1,541,581	76.3	420,657	83.4
WDR	42.8	78.4	693,974	76.6	371,625	81.7
MWDR	25.4	42.5	516,122	40.7	178,892	47.9
FWDR	23.1	48.5	348,376	47.9	121,327	49.8

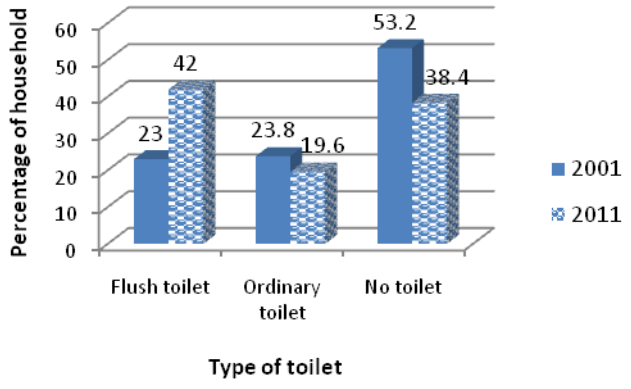
Source: Same as in Table 8.6.

Note: EDR = Eastern Development Region; CDR = Central Development Region; WDR= Western Development Region; MWDR = Mid-western Development Region; and FWDR= Far-western Development Region.

8.6 Toilet facilities

Sanitation is an important factor that improves personal health by reducing various diseases such as diarrhoea and polio. Improved and hygienic toilets that securely dispose of human excreta will significantly reduce diseases that have an adverse impact on personal health. The MDGs have also given special priority to sanitation. MDG indicator 31 refers to the proportion of the population with access to improved sanitation. The term sanitation is generally related to toilet facilities and cleanliness of surroundings. It is also expressed as the coverage of toilet facilities. Nation-wide Open Defecation Free (ODF) Village Development Committees and District Committees have been formed to improve sanitation.

Fig. 8.9 Percentage of household by type of toilet, 2001-2011



In the 2001 census, there were two categories on toilet facilities in households. These were modern toilets with flush and ordinary. Modern toilets with flush referred to a household's own toilet that could be inside a house or within the compound of a house, and in such a type of toilet, human excreta could be cleaned by pouring water (manually or by machine). This type of toilet was connected to a septic tank or public drainage. On the other hand, an ordinary toilet was not connected to sewage or a septic tank and it might not be possible to clean it by pouring water. If some households had no toilet facility in their own premises and generally used public or community toilets, they were categorised as households having no toilet facility. In the same way, households using open places for defecating were also considered under the no toilet facility category. In the 2011 census, the definition of households having toilet facilities was similar to previous censuses and data was comparable. However, modern toilets with flush facility were divided into two types in the census of 2011 on the basis of its type of connectivity. One type was connected to public drainage and the other was connected to a septic tank.

8.6.1 National level

Data of toilet facilities in different censuses and surveys are shown in Table 8.19. In 2001, about half of Nepalese households did not have a toilet facility. Within a decade there has been an improvement and the percentage of households without a toilet facility has reduced by 14.8 percentage points in 2011. In 2001, households having a toilet facility were divided into two segments –flush toilet and ordinary toilet. The distribution was observed to be almost 23% in each segment in previous censuses. This was different after a decade. In 2011, 61.6% of households had toilet facilities and about two thirds of them were using a flush toilet. Those toilets were connected either to public sewerage or a septic tank. The percentage of households using ordinary toilets decreased in the last census compared to 2001. Again, most flush toilets were connected to septic tanks and the proportion of toilets connected to public sewerage was very low in 2011. Therefore, it might be argued that there is insufficient infrastructure of public sewerage facilities in human settlements of Nepal. The coverage of toilet facility and its type followed a similar trend to the Nepal Labour Force Survey 2008 and Annual Household Survey 2012/13.

Table 8.19: Percentage of household by type of toilet used, Nepal, 2001- 2012/13.

Type of toilet	Percentage distribution			
	Census 2001	NLFS 2008	Census 2011	AHS 2012-13
Flush toilet	23.0	25.4	42.0	49.8
Flush to public sewerage	-	4.3	8.3	6.1
Flush to septic tank	-	21.1	33.7	43.7
Ordinary toilet	23.8	23.3	19.6	17.8
No toilet	53.2	51.3	38.4	32.4
Total Percentage	100.0	100.0	100.0	100.0
Not Stated	57380	-	34971	-
Total Household	**4,174,457**	**15,976**	**5,423,297**	**2,985**

Source: Same as in Table 8.1.

8.6.2 Urban/rural

Table 8.20 shows the urban rural difference on households having a toilet facility. About 90% of households in urban areas had a toilet facility in 2011, whereas there were about 22% of households without a toilet a decade before. The percentage of households without a toilet was significant in rural areas even in 2011. The proportion of households having ordinary toilets decreased in both urban and rural areas during the intercensal period. It decreased by more than half in urban areas during this period. Households having flush toilet increased by 25.4 and 16.5 percentage points in urban and rural areas respectively. A higher proportion of flush toilets were connected to septic tanks in both urban and rural areas. There were more flush toilets connected to public sewerage in urban compared to rural areas.

Table 8.20: Percentage of household by type of toilet used for urban/rural residence, Nepal, 2001- 2011.

Type of toilet	Urban		Rural		Total	
	2001	**2011**	**2001**	**2011**	**2001**	**2011**
Flush toilet	53.0	78.4	17.3	33.8	23.0	42.0
Flush to public sewerage	-	30.5	-	3.0	-	8.3
Flush to septic tank	-	47.9	-	30.3	-	33.7
Ordinary toilet	25.0	12.5	23.5	21.3	23.8	19.6
No toilet	21.9	9.2	59.2	45.4	53.2	38.4
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	8,567	8,148	48,813	26,823	57,380	34,971
Total Household	**664,507**	**1,045,575**	**3,509,950**	**4,377,722**	**4,174,457**	**5,423,297**

Source: Same as in Table 8.2.

8.6.3 Kathmandu valley

Table 8.21 shows urban/rural distribution of households by type of toilet facility in the Kathmandu Valley. In the Kathmandu Valley, almost all urban households had toilet facilities in 2011, whereas a low percentage of rural households still had no toilet. In three districts of Kathmandu Valley, only 2% of households were without a toilet in 2011 and about 10% had ordinary toilet facilities. Most households that had a flush toilet facility were within these three districts of the valley. The percentage of ordinary toilets increased in rural areas in 2011. The reverse situation was true in urban areas, where there was a decrease of 24.8 percentage points during the intercensal period. It can be argued that urban households have shifted from ordinary to flush toilets in the intercensal period and households having flush toilet exceed percentages of ninety in 2011.

Table 8.21: Percentage of household by type of toilet used for urban/rural Kathmandu Valley, 2001- 2011.

Type of toilet	Urban		Rural		Total	
	2001	2011	2001	2011	2001	2011
Flush toilet	67.4	93.4	66.4	80.3	67.1	88.1
Ordinary toilet	31.1	6.3	10.8	15.3	23.6	9.9
No toilet	1.5	0.3	22.7	4.4	9.3	1.9
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	1,903	2,985	1,268	2,013	3,171	4,998
Total Household	**218,322**	**366,255**	**127,240**	**247,351**	**345,562**	**613,606**

Source: Same as in Table 8.3

8.6.4 Ecological zone

The disparity of coverage in toilet facilities among ecological zones is presented in Table 8.22. More than 50% of households in the Tarai zone had no toilet facility in 2011. However, there was some improvement in 2011 compared to 2001. In Hill zone, one fourth of total households did not have a toilet facility, the lowest percentage among ecological zones. Similarly, there was an improvement in Mountain zone, the percentage of households having no toilet decreased by 19.1 percentage points during the intercensal period. About 40% of households still had no toilet facility in 2011 in the zones. However, there was an improvement in the coverage of toilet facilities over the decade. The coverage of ordinary toilets decreased in all three zones. On the other hand, more than 50% of households in Hill zone used flush toilets in 2011 and the majority of them were connected to a septic tank. A similar situation was also observed in Mountain and Tarai. The percentage of flush toilets connected to public sewerage was higher in Hill whereas it was around 1% in Tarai and less than 1% in Mountain.

Table 8.22: Percentage of household by type of toilet used for ecological zones, 2001- 2011.

Type of toilet	Mountain		Hill		Tarai	
	2001	2011	2001	2011	2001	2011
Flush toilet	7.9	27.3	27.2	53.5	21.0	32.4
Flush to public sewerage	-	0.4	-	16.4	-	1.3
Flush to septic tank	-	26.9	-	37.1	-	31.1
Ordinary toilet	32.9	32.6	29.2	21.4	16.9	15.9
No toilet	59.2	40.1	43.5	25.0	62.1	51.6
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	3,065	1,867	23,023	13,569	31,292	19,535
Total Household	**285,214**	**363,698**	**1,951,192**	**2,532,041**	**1,938,051**	**2,527,558**

Source: Same as in Table 8.2.

8.6.5 Development region

Variations in toilet facilities between Development Regions are shown in Table 8.23. The highest percentage of households without a toilet facility was observed in Far-western region, followed by Mid-western and Eastern regions in 2011. Western region had the lowest percentage of households without a toilet facility. During the intercensal period, the percentage of flush toilets has increased in all development regions. Western region had a higher percentage of flush toilets, followed by Central region. Flush toilets were mostly connected to septic tanks in all regions. Among five development regions, Central region had the highest percentage of households having a toilet facility that connected to public sewerage. It is noted that public sewerage facilities are very poor in the other four regions and it was observed at around only 1% in each of those regions. The percentage of ordinary toilets only increased in Mid-western region, while the rest of the regions had a lower percentage of ordinary toilets compared to 2001. Eastern region had the highest percentage of ordinary toilets among regions, followed by Mid-Western and Western regions in 2011.

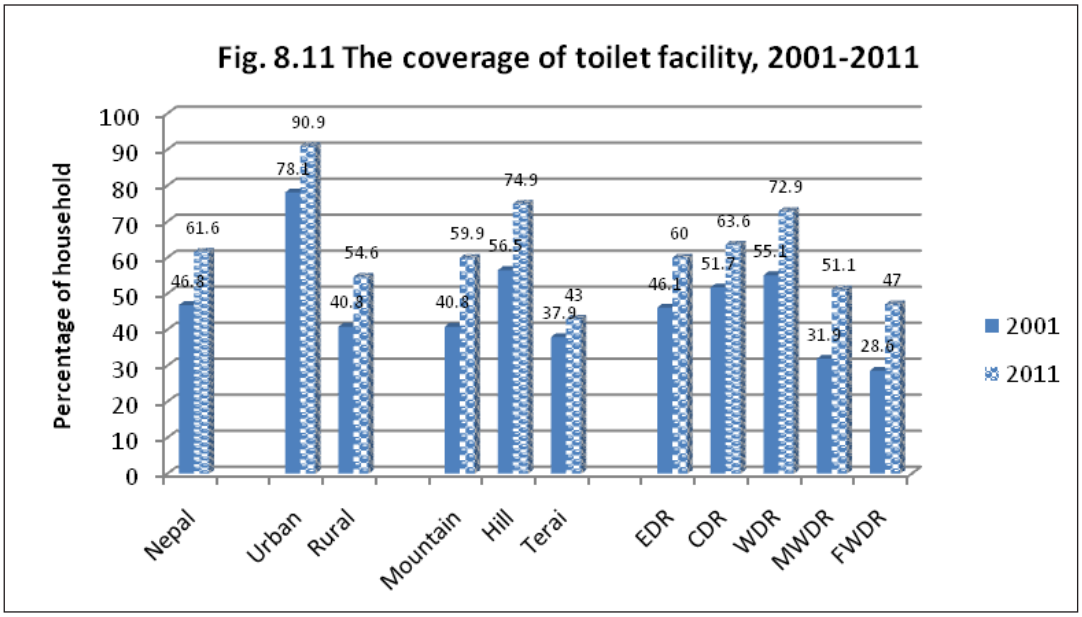


Table 8.23: Percentage of household by type of toilet used for Development Regions, 2001- 2011

Type of toilet	Census Year	Development Regions					
		Eastern	Central	Western	Mid-western	Far-western	Total
Flush toilet	2001	15.7	30.4	27.0	16.2	12.6	23.0
	2011	30.2	49.8	53.4	30.4	31.2	42.0
Flush to public sewerage	2001	-	-	-	-	-	-
	2011	1.5	20.7	1.4	1.0	1.0	8.3
Flush to septic tank	2001	-	-	-	-	-	-
	2011	28.7	29.1	52.0	29.4	30.2	33.7
Ordinary	2001	30.4	21.2	28.1	15.7	16.0	23.8
	2011	29.8	13.8	19.5	20.7	15.8	19.6
No toilet	2001	53.9	48.3	44.9	68.1	71.4	53.2
	2011	40.0	36.4	27.1	48.8	53.0	38.4
Total Percentage	**2001 2011**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Not Stated	2001	10,010	21,806	10,546	7,800	7,219	57,380
	2011	6,815	16,785	5,203	3,411	2,757	34,971
Total Household	**2001**	**1,000,441**	**14,65,753**	**863,045**	**479,817**	**365,401**	**4,174,457**
	2011	**1,230,743**	**1,962,238**	**1,065,599**	**695,014**	**469,703**	**5,423,297**

Source: Same as in Table 8.6.

The overall coverage of toilets (flush and ordinary) has increased by 14.8 percentage points during the intercensal period. During this period, the coverage reached up to 90.9% in urban areas. Though there was an increment in total toilet coverage in rural areas, the pace of the increase was lower than that of urban areas. Ecologically, there was also variation in coverage of total toilet facility. The highest percentage of coverage was observed in Hill zone, followed by Mountain. Tarai was left behind in the progress of total toilet coverage compared to the other two ecological zones. The disparity was also observed in the coverage of total toilet facility among development regions. The highest percentage of coverage was observed in Western region, followed by Central, Eastern and Mid-western regions. Far-western region had the lowest coverage of total toilet facilities.

Among the districts of Nepal, Saptari had the lowest (19.6%) coverage of toilets, followed by Siraha (20.6%) and Rolpa (21.3%) in 2011. Inversely, the highest coverage of toilets was in Kaski (99.1%), followed by Kathmandu (98.8%) and Bhaktapur (96.9%). There were still 37 districts whose coverage was below the national average. A Sanitation Master Plan has been developed so that toilet facility coverage reaches up to 80% by 2015 (MDGs progress Nepal 2013).

8.6.6 Gender disparity in access to toilet facility

Table 8.24 indicates the gender disparity on having a toilet facility in the household. There was an 8.6 percentage point difference in having a toilet facility among sexes of household heads. A higher percentage of households having a toilet facility was observed in female-headed households compared to male-headed households in 2011. This situation was the same in both urban and rural areas. However, the difference in having a toilet facility between male and female heads of households was more apparent in rural areas compared to urban. There was no significant difference in Mountain and Hill zones. But in Tarai about 59% of female household heads had a toilet facility compared to only 45.4% in male-headed households. In Far-western region, the percentage of households

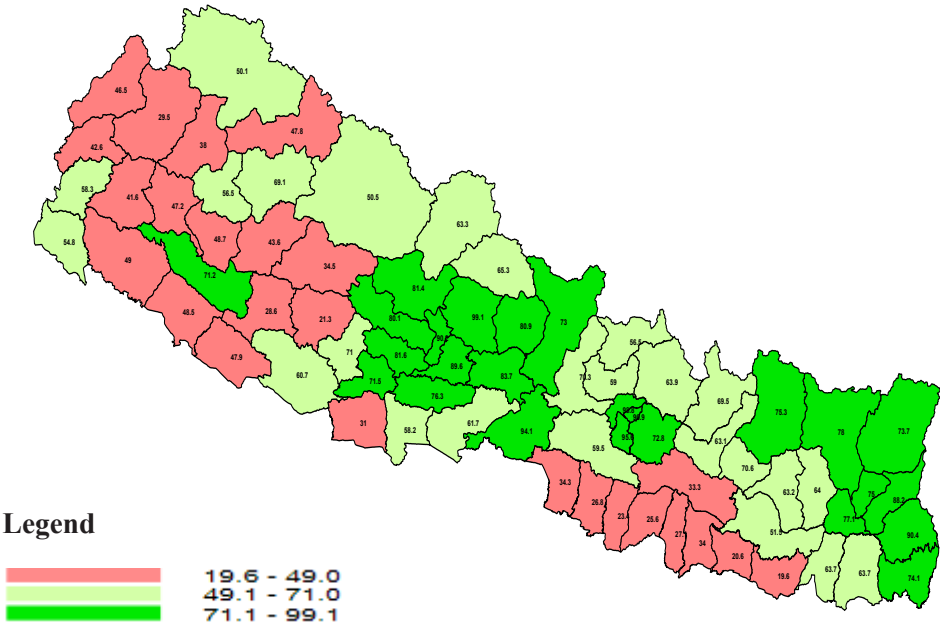
having a toilet facility was observed more in male-headed households compared to female-headed households. Inversely, the coverage of toilet facilities was higher in households with a female head compared to households with a male head in the other four regions - Eastern, Central, Western and Mid-western regions.

Table 8.24: Percentage of household by having toilet and sex of household head, Nepal, 2011.

Residence	Having toilet (%)		Sex of household head by having tiolet			
			Male		Female	
	2001	2011	Household	Percent	Household	Percent
Nepal	46.8	61.6	4,027,336	59.4	1,395,961	68.0
Urban	78.1	90.9	751,279	90.3	294,296	92.1
Rural	40.8	54.6	3,276,057	52.3	1,101,665	61.5
Mountain	40.8	59.9	280,490	60.1	83,208	59.2
Hill	56.5	74.9	1,761,301	74.9	770,740	75.2
Tarai	37.9	43.0	1,985,545	45.4	542,013	59.1
EDR	46.1	60.0	927,283	58.4	303,460	64.7
CDR	51.7	63.6	1,541,581	61.0	420,657	73.1
WDR	55.1	72.9	693,974	69.2	371,625	79.7
MWDR	31.9	51.1	516,122	50.3	178,892	53.6
FWDR	28.6	47.0	348,376	48.2	121,327	43.4

Source: Same as in Table 8.6.
Note: EDR = Eastern Development Region; CDR = Central Development Region; WDR= Western Development Region; MWDR = Mid-western Development Region; and FWDR= Far-western Development Region.

Fig. 8.10 Proportion of household with access to toilet facility, 2011



8.7 Household facilities in different types of house

The type of house reveals the socio-economic status of households. Household facilities vary between different types of houses. Table 8.25 presents the coverage of facilities such as drinking water, cooking fuel, lighting fuel, toilet and mobile phones by type and ownership of house in 2011. The coverage of tap/piped water was high in households residing in a Pakki type of house (permanent structure made with permanent construction materials like cement, bonded brick, stone etc.). Obviously, the coverage of household facilities was very low in Kachchi houses (made of non-durable construction materials like wooden flakes, bamboo, mud etc.). Tube-well was the major source of drinking water for households residing in Kachchi houses and about 70% of households used this source. About half of households in 'Others' type of houses (very temporary residential units made with plastic sheets, straw/thatch etc.) were using tube-well as their source of drinking water. Similarly, a higher percentage of households in Semi-pakki houses (either the wall or roof was made of permanent construction materials and the other was made of temporary materials) had access to tube-well water.

Firewood was the prime source of cooking fuel of households living in all types of houses. In Pakki houses, the highest percentage of households used firewood, followed by LP gas (33.7%). But, firewood (79.1%) was the major source of fuel for cooking in Semi-pakki houses, and cow-dung (14.5%) was also a notable source of fuel in this type of house. The percentage of coverage of LP gas was very low in Kachchi and 6.5% was observed in 'Others' type of houses. About one third of Kachchi house used cow-dung as a source of cooking fuel, the same in 14.5% and 12.5% of Semi-pakki and 'Others' respectively.

There was also a disparity among different types of houses in the use of lighting fuel. Households living in Pakki type houses mostly used electricity for lighting and a few households used kerosene (8.9%) and solar (6.9%). The coverage of electricity was also high among sources of lighting fuel in households living in Semi-pakki houses. In such types of houses, there was a substantial percentage of kerosene (26.4%) users, followed by solar (9.6%) and others (9.1%). More than 50% of households living in Kachchi houses were using kerosene as their usual source of lighting fuel. In such houses, electricity was in second place among lighting fuels. Kerosene was a major source for lighting for households living in 'Others' types of houses.

There was wide variation of toilet facilities in households among different types of house. The coverage of flush toilet facilities was high in Pakki house at 59.6%. But it was interesting that 22.3% of households residing in such types of houses had no toilet facility. Similarly, more than 55% of households living in Semi-pakki houses had no toilet and the share of ordinary toilets was higher compared to flush toilets in such types of houses. The proportion of households without toilet facilities was higher in Kachchi houses compared to Pakki, Semi-pakki and 'Others'.

8.8 House facilities by ownership of house

Household facilities differ with the ownership type of residential houses as presented in Table 8.25 for 2011. Among sources of drinking water, the coverage of tap/piped was high in households living in their own houses and tube-well was also a sizable source for them. In the case of rented houses, about two-thirds of households used tap/piped water while a considerable percentage was observed in other sources of drinking water. The higher coverage of tap/piped water was observed in institutional houses, followed by tube-well. A similar pattern of distribution of drinking water sources was also observed in 'Others' ownership of houses.

Concerning variation in sources of cooking fuel, firewood was the major source among households residing in their own house, whereas it was a very low percentage for those living in rented houses. In owned houses, a percentage of households were using cow-dung for cooking. The percentage of LP gas was high in both rented and institutional houses. In institutional houses, the percentage of electricity users for cooking purposes was lower. Firewood was the major source of energy fuel for households living in 'Others' ownership.

Table 8.25: Percentage distribution of household having facilities by types of house, ownership and mobile phone Nepal, 2011.

Facility	Types of house				Ownership of house				Household having mobile phone (%)
	Pakki	Semi-pakki	Kachchi	Others	Owned	Rented	Institutional	Others	
Source of drinking water									
Tap/piped	59.6	36.1	15.5	30.0	45.3	66.2	64.4	47.4	68.2
Tube-well	23.8	47.1	68.2	50.3	38.3	16.5	24.2	31.5	63.3
Well	6.5	8.3	8.2	4.8	7.5	5.3	4.1	9.1	61.1
Covered- well	3.2	1.6	1.1	0.8	2.2	4.1	2.4	2.6	76.9
Uncovered- well	3.3	6.7	7.1	4.0	5.3	1.2	1.7	6.5	52.9
Spout	6.1	6.0	3.0	7.4	6.2	3.3	2.7	6.8	52.6
River/stream	0.9	1.4	1.8	2.1	1.2	0.3	0.4	1.9	39.7
Others	3.2	1.1	2.3	5.4	1.5	8.5	4.2	3.3	78.2
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	-
Source of cooking fuel									
Wood/firewood	57.1	79.1	62.8	76.0	71.6	17.2	30.3	74.4	57.9
Kerosene	1.1	0.7	1.4	2.2	0.7	3.2	3.6	1.3	59.9
LP Gas	33.7	3.2	0.7	6.5	12.4	78.6	58.6	16.3	91.2
Cow-dung	4.6	14.5	33.4	12.5	12.1	0.3	2.1	6.0	50.7
Bio-gas	3.1	1.9	0.5	0.6	2.8	0.2	0.2	1.2	88.7
Others	0.3	0.5	1.2	2.2	0.4	0.6	5.2	0.8	56.1
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	-
Source of lighting fuel									
Electricity	79.6	54.5	36.6	37.7	63.5	95.2	90.3	60.7	76.6
Kerosene	8.9	26.4	51.1	39.5	20.7	2.6	6.0	25.8	37.8
Bio-gas	0.3	0.3	0.3	0.5	0.3	0.4	0.3	0.3	64.6
Solar	6.9	9.6	4.2	9.5	8.5	1.2	2.3	5.4	59.1
Others	4.3	9.1	7.8	12.8	7.0	0.7	1.1	7.9	25.8
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	-

(Table continues...)

(Table 8.25 continued...)

Facility	Types of house				Ownership of house				Household having mobile phone (%)
	Pakki	Semi-pakki	Kachchi	Others	Owned	Rented	Institutional	Others	
Toilet									
Flush toilet	59.7	19.0	7.3	11.3	36.6	83.4	76.6	35.5	83.1
Ordinary toilet	17.9	24.4	14.3	24.4	20.7	12.2	13.0	25.8	64.9
No toilet	22.3	56.6	78.4	64.8	43.7	4.4	10.4	38.7	45.2
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	-
Total Household	**3165859**	**1683875**	**514507**	**3618**	**4623653**	**694701**	**34313**	**70630**	

Source: Central Bureau of Statistics (2012). National Population and Housing Census, National Report, and re-tabulation from. digital data

Electricity was the major source of lighting fuel for households living in all types of ownership of houses. In rented and institutional houses, the coverage exceeded 90%. A noticeable proportion of kerosene fuel users were observed in two categories of ownership – owned and others. In those house ownership types, solar energy was also used for lighting. Similarly, others source of fuel for lighting were observed in those types of houses.

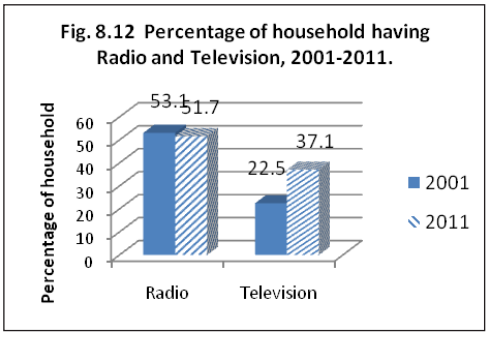
There was a better coverage of toilet facilities in rented and institutional houses. The percentage of flush toilets was 83.4% and 76.6% in rented and institutional houses respectively. There was still 43.7% of households without a toilet facility living in owned house.

8.9 Possession of consumer durable goods

Possession of some common consumer durable goods is an indicator of the socio-economic status of a household. The decennial population census collected information on possession of these goods. To date, censuses have placed more focus on the operational aspects of these consumer durable goods and facilities rather than their ownership. In the last census, information was collected about some household amenities and those related to media, (communications) and transportation, including radios, televisions, cable televisions, computers, internet, telephones, mobile phones, motor vehicles, motorcycles and bicycles.

8.9.1 Radio

Radio and television are a very common possession in many Nepalese households. Table 8.26 shows the change in possession of radio and television between the two censuses. Overall, more than half of Nepalese households had a radio. However, this decreased by 1.4 percentage points in 2011 compared to 2001. Comparatively, urban households had more access to a radio in both censuses. However, the percentage decreased during the intercensal period. Among three ecological zones, Hill had the highest percentage of households possessing a radio, followed by Mountain. It was observed that there were a lower percentage of households with a radio in Tarai compared to the two other ecological zones in both censuses. In Mountain zone, there was an increment in this percentage in 2011, while it decreased in Hill and Tarai. A slight increment in percentage of radio ownership was also observed in Eastern Development Region (EDR), however, it decreased in other development regions. Western Development Region (WDR) had the highest percentage, followed by Mid-western Development Region (MWDR) and Central Development Region (CDR). In Far-western Development Region, there was no significant difference in the percentage distribution during intercensal period.



8.9.2 Television

Television is the most effective audio-visual media. Table 8.26 shows the percentage distribution of households with a television facility and its pattern of change between the two censuses. The percentage increased during the intercensal period and more than one third of households had a TV in 2011. Having a television facility nearly doubled in rural residences in 2011 compared to 2001. Obviously, urban had a higher percentage of this facility compared to rural in both censuses. Ecologically, Tarai had the highest percentage of households having a television compared to Hill and Mountain. Mountain had the lowest percentage among the three ecological zones. The increment in having a television was significant in all three zones during the intercensal period. The increment was observed in all development regions during the same period. In 2011, the highest percentage was found in Central Development Region (CDR), followed by Eastern Development Region (EDR), Western Development Region (WDR) and Far-western Development Region (FWDR). The lowest percentage was observed in Mid-western Development Region (MWDR) in 2011.

Table 8.26: Percentage distribution of households by Radio and Television facility, Nepal, 2001-2011.

Residence	Percentage of household having facility			
	Radio		Television	
	2001	2011	2001	2011
Nepal	53.1	51.7	22.5	37.1
Urban	64.7	54.2	54.9	61.4
Rural	50.9	51.1	16.4	31.3
Mountain	53.9	57.8	4.5	15.1
Hill	63.4	60.0	22.6	37.0
Tarai	42.6	42.0	25.1	40.3
EDR	48.8	49.1	19.3	37.9
CDR	53.6	51.7	32.9	47.7
WDR	57.5	55.2	19.3	36.5
MWDR	55.5	52.8	11.8	17.8
FWDR	49.5	49.4	11.6	20.5

Source: Same as in Table 8.2.
Note: EDR = Eastern Development Region; CDR = Central Development Region; WDR= Western Development Region; MWDR = Mid-western Development Region; and FWDR= Far-western Development Region.

8.9.3 Cable Television

Cable Television is becoming more popular and an effective media tool in Nepalese society. The last population census collected information on households having this facility. The coverage is presented in Table 8.27. Nearly one fifth of the total households in the country had this facility. The coverage was wider in urban compared to rural areas. About more than half of households had this facility in urban areas. Comparatively, Hill had a higher coverage, while the lowest was in Mountain zone. Similarly, Central region had the highest percentage of coverage, followed by Western, Eastern and Mid-western. Far-western region had the lowest coverage among the five development regions.

8.9.4 Refrigerator

The population census of 2011 collected information on household possession of a refrigerator (see Table 8.27). The census results show that the percentage of households with a refrigerator is very low (7.3%). This facility was mainly concentrated in urban households (23.5%), while rural households had a very low coverage of this facility (3.4%). Generally, it was directly related to the facility of electricity. In Mountain zone, households with electricity was low (table 8.16) and so the coverage of refrigerators was less than 1% in this zone. Hill zone had the highest percentage of having this facility among the three ecological zones. Similarly, Central Development Region had the highest percentage, followed by Western and Eastern regions. The lowest percentage of households with this facility was observed in Far-western Development Region.

8.9.5 Computer

Table 8.27 shows the percentage distribution of households possessing various facilities of consumer durable goods and services specifically related to communications. The 2011 census collected information on the use of computers in households and this is related to Indicator 48A of the Millennium Development Goals. Overall 7.4% of households had a computer facility and this was mainly concentrated in urban areas. The percentage of households having this facility in rural was nearly seven times lower compared to urban. Similarly, Hill zone had comparatively more of this facility. Mountain had very low percentage compared to Hill and Tarai. A higher percentage of households possessing this facility was observed in Central region, followed by Western and Eastern regions.

8.9.6 Internet

The percentage of households having internet facilities was 3.4% and this facility was concentrated mainly in urban areas (see Table 8.2.7). In rural areas, the facility was very low at around 1%. Ecologically, 5.6% of households in Hill had internet facility, whereas it was less than 1% in Mountain. The possession of this facility was related to MDG Indicator 48B.

8.9.7 Telephone

Overall 7.5% of households had a telephone facility in 2011 (see Table 8.27). There was a wide difference between urban and rural households regarding the possession of a telephone facility. Urban households had six times more of this facility than rural households. Hill households had more telephone facilities compared to Tarai and Mountain. Possession of this facility was higher in Western region, followed by Central, Eastern, Mid-western regions.

8.9.8 Mobile phone

Mobile phones are a very common possession in many households and the census result showed that about 66 % of households had this facility in 2011 (see Table 8.27). Most urban households (85%) had mobile phones while it was only 61.2 % in rural areas (see Fig. 8.13). The variation in percentage of having a mobile phone was observed between different ecological zones. The percentage of households having a mobile phone was low in Mountain. Hill had a higher percentage of households with a mobile phone compared to the two other zones – Mountain and Tarai. Similarly, a higher percentage of households with a mobile phone was observed in Western region, followed by Central and Eastern regions. The lowest percentage was in Far-western region where about half of households in the region had a mobile phone.

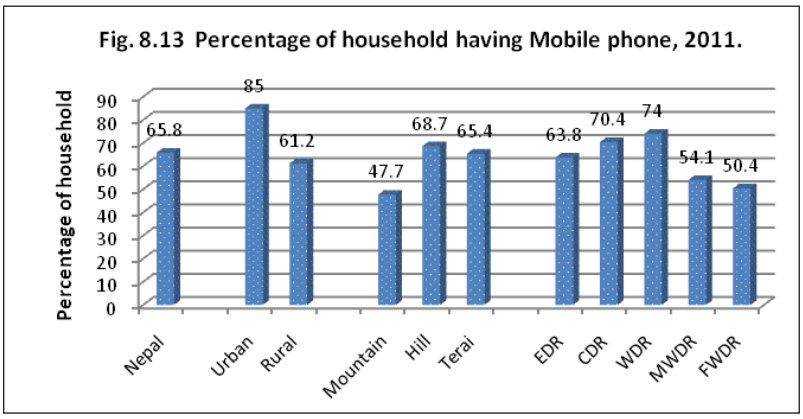


Table 8.25 shows the possession of mobile phones in households by access to facilities like drinking water, cooking and lighting fuel and toilets. The highest percentage of households with a mobile phone facility was observed among 'Others' source of drinking water users, followed by covered well, tap/piped and tube-well. As stated above, 'Others' source of water includes tankers, jars and bottles and the coverage of it was observed more in urban areas. Apart from the 'Others' source of drinking water, it is noted that there was a direct relation between improved source of drinking water (tap/piped, tube-well and covered well) and possession of a mobile phone.

Households using LP gas for cooking had the highest possession of a mobile phone, followed by biogas and electricity. Households using solid fuel (firewood, cow-dung and other) had a low percentage of having a mobile phone. This indicates that the possession of a mobile phone is also positively related to the economic status of a household. Generally, the economic status of a household using LP gas, biogas and electricity for cooking is better than users of cow-dung and firewood. Similarly the percentage of mobile phone possession was considered against energy sources of lighting in households. The highest possession of mobile phones was found among electricity users for lighting, followed by biogas and solar energy.

Table 8.27: Percent of households by possession of some consumer durable goods and services, Nepal, 2011.

Residence	Percent of household having facility										Total Household
	Computer	Internet	Telephone	Mobile Phone	Cable Television	Refrigerator	Motor	Motorcycle	Cycle	Other vehicle	
Nepal	7.4	3.4	7.5	65.8	19.7	7.3	1.6	9.8	33.0	0.7	5,423,297
Urban	23.9	12.3	22.9	85.0	54.4	23.5	4.1	23.9	30.0	0.6	1,045,575
Rural	3.4	1.3	3.8	61.2	11.3	3.4	1.0	6.3	33.6	0.7	4,377,722
Mountain	1.4	0.5	2.8	47.7	5.6	0.7	0.2	0.8	0.3	0.6	363,698
Hill	11.1	5.6	10.2	68.7	26.2	9.2	1.7	10.2	5.5	0.2	2,532,041
Tarai	4.6	1.6	5.5	65.4	15.2	6.3	1.7	10.6	65.1	1.2	2,527,558
EDR	4.0	1.4	5.5	63.8	11.0	4.7	1.3	7.5	43.6	0.6	1,230,743
CDR	13.6	6.8	12.0	70.4	29.4	11.2	2.5	15.4	31.4	0.6	1,962,238
WDR	5.8	2.5	6.0	74.0	24.7	8.2	1.3	8.4	28.5	0.6	1,065,599
MWDR	2.2	0.7	3.0	54.1	8.7	2.7	0.5	3.7	24.5	0.5	695,014
FWDR	2.0	0.7	4.1	50.4	6.1	2.3	0.9	4.1	33.8	1.9	469,703

Source: Same as in Table 8.2.

Note: EDR = Eastern Development Region; CDR = Central Development Region; WDR= Western Development Region; MWDR = Mid-western Development Region; and FWDR= Far-western Development Region.

Having a sanitation facility is also a sign of well-being. The highest percentage of households with no mobile phone was observed among households without a toilet. On the contrary, the highest percentage of mobile phone possession was among households with a flush toilet facility. There was a positive relation between possession of a mobile phone and having a toilet facility.

8.9.9 Motor vehicle

Table 8.27 shows the distribution of households possessing different means of transportation facilities. Overall 1.6 % of households possessed a motor vehicle (four wheel vehicle) facility as their means of transportation and this was mainly concentrated in urban areas. In Mountain, having comparatively lower road access, the percentage of households having a motor vehicle was negligible, whereas it was 1.7% in Hill and Tarai respectively.

8.9.10 Motorcycle

Overall, 9.8% of households possessed a motorcycle as a means of transportation (see Table 8.27). This facility was observed more in urban households (23.9%), nearly four times higher than that of rural households. Among ecological zones, Tarai had comparatively more motorcycle facilities, while the lowest was in Mountain. Central region had the highest percentage of households with a motorcycle, followed by Western and Eastern regions.

8.9.11 Bicycle

The percentage of household with a bicycle was higher (33.0%) than that of motor and motorcycles (see Table 8.27). This facility was observed more in rural compared to urban areas. This means of transportation is a common possession in households of the Tarai. Overall 65.1% of households had this facility in Tarai, whereas it was only 5.5% in Hill. In Mountain, it was less than1%. A higher percentage of households with a bicycle was observed in Eastern region, followed by Far-western, Central and Western regions.

Households also possessed some other type of transportation facility, for example cart, bullock, mule and horse. The percentage of households possessing this type of facility was very low. Less than 1% of households had this facility in both urban and rural areas. Ecologically, Tarai had only 1.2%, while Far-western region had 1.9% of households with this facility.

Table 8.28: Percentage of households having at least one facility (consumer durable goods & service) by sex of household head, Nepal, 2011.

Residence	Sex ratio of household head	Household having at least one facility (in percent)		
		Head of household		Total
		Female	Male	
Nepal	288.5	83.5	87.0	86.1
Urban	255.3	94.6	96.3	95.8
Rural	297.4	80.5	84.8	83.7
Mountain	337.1	67.6	75.2	73.4
Hill	228.5	83.3	86.6	85.6
Tarai	366.3	86.2	88.9	88.3
EDR	305.6	82.7	86.7	85.7
CDR	366.5	87.4	89.0	88.7
WDR	186.7	89.4	91.6	90.8
MWDR	288.5	77.0	79.7	79.0
FWDR	287.1	63.0	80.2	75.8

Source: Same as in Table 8.2.

Note: EDR = Eastern Development Region; CDR = Central Development Region; WDR= Western Development Region; MWDR = Mid-western Development Region; and FWDR= Far-western

8.9.12 Household without and with at least one facility

Table 8.28 refers to the distribution of households having at least one facility by sex of household head in 2011. As mentioned above, the 2011 census collected information on facilities like radios, televisions, cable televisions, refrigerators, computers, internet, telephones, mobile phones, motor vehicles, motorcycles and bicycles. Overall 86.1% of households had at least one such facility. In urban areas, more than 95% of households had at least one such facility whereas it was only 83.7% in rural areas, indicating, the difference in possession of facilities between rural and urban areas. The higher percentage of households having at least one such facility was observed in Tarai among the three ecological zones. Mountain zone had a comparatively low percentage of households having one such facility. It showed that there were still a higher percentage of households without any facility (26.6%). The percentage of households having at least one facility in Western region was over 90% and only 9.2% of household did not have any such facility. This region was followed by Central, Eastern and Mid-western regions. Far-western region still had 24.2% of households without any such facility.

8.9.13 Gender difference in possessing goods & service

Table 8.28 presents the gender difference in the possession of consumer durable goods and services. The percentage of households having facilities differed by sex of household head. Overall 16.5% of households with a female head did not possess any goods and service as mentioned. However, such percentage was also low in households with a male head. This difference was observed more in rural compared to urban areas. In rural areas, there was a 4.3 percentage points difference between male and female heads of households that had no facility, whereas it was only 1.7 percentage points difference in urban areas. Similarly, such differences were 7.6 percentage points in Mountain zone, and just 3.3 and 2.7 percentage points in Hill and Tarai respectively. Far-western Development

Region had a significant difference in possession of household facilities by sex of household head. In the regions, households with male heads had more facilities (17.2 percentage points) compared to households with female heads. Less gender disparities in possession of household facilities were observed in Central region, followed by Western and Mid-western region.

8.10 Conclusion

Household assets and amenities show the quality of life and status of socio-economic development. The coverage of household facilities has substantially increased during the intercensal period (2001 and 2011). However, there were disparities among different ecological zones and development regions. Similarly, such disparities were also observed between urban and rural areas, as well as between different districts. Primarily, these facilities are related to MDG indicators, such as improved sources of drinking water, solid fuel for cooking, access to toilets, computers and access to the internet. Some indicators show remarkable progress has been made in reaching the MDG targets while some have yet to meet their respective targets. By gender perspective, there was no significant difference in possession of facilities among male and female heads of households.

Concerning MDG Indicator 30, the coverage of improved source of drinking water that includes tap/piped, tube-well and covered well, has substantially increased and the MDG target has been achieved before its schedule (2015). However, the coverage of other sources of drinking water (including tanker, jar and bottle) considerably increased in the urban areas of the Kathmandu valley during the intercensal period and the source is not regarded as improved. Therefore it is necessary to focus on the achievement of universal access to basic drinking water by 2017, as targeted by the thirteenth three-year plan and its improvement of water quality. Regarding MDG indicator 31 that relates to access to improved sanitation, the proportion of households having access to toilet facilities has increased between the 2001 and 2011 censuses. Toilet facilities have substantially increased in urban areas and it was also an increasing trend in rural areas. The coverage of toilet facilities has to be increased more and it can be expected that the nation-wide campaign to declaration of Open Defecation Free (ODF) will support Nepal to achieve its MDG target. In regard to MDG Indicator 29, the target is yet to be achieved and the proportion of households using solid fuel for cooking has not noticeably reduced during the intercensal period. During the period, the use of kerosene sharply decreased and LP gas increased its coverage as a cooking fuel. The coverage of solid fuel for cooking has to be reduced significantly to obtain the MDG target. Similarly, there was a drastic change in the coverage composition of lighting fuel in households. The share of kerosene sharply decreased during the intercensal period and electricity dramatically increased. Solar power has been becoming more popular as a source of lighting fuel, especially in remote village areas. Therefore, solar power and rural electrification programmes need to be enhanced as effective sources of lighting fuel.

A disparity was observed among different parts of the country in terms of the possession of consumer durable goods and services, especially related to communications and transportation, such as radios, televisions, telephones, mobile phones, bicycles, motorcycles and motor vehicles. However, most households possessed at least one of these goods and services. In gender perspectives, households with male heads had a higher percentage of having at least one facility compared to that of households with a female head. It can be expected that the development of rural transportation and electrification networks will increase the possession of these consumer durable goods and services in the future.

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Annex 8.1: Percentage distribution of some household facilities by district, Nepal, 2011.

District	Household	Improved source of drinking water (%)	Solid fuel used for cooking (%)	Electricity used for lighting	Having toilet facility (%)
Taplejung	26,471	91.2	96	25.2	73.7
Panchthar	41,176	73.4	92.9	28	88.2
Ilam	64,477	79.4	91	65.9	90.4
Jhapa	184,384	96	67.2	82.4	74.1
Morang	213,870	97.7	71.3	76.1	63.7
Sunsari	162,279	97.3	67.8	82.2	63.7
Dhankuta	37,616	83.7	86.9	84.2	77.1
Terhathum	22,084	78.8	94.6	67.4	75
Sankhuwasabha	34,615	69.2	95	52.8	78
Bhojpur	39,393	71.2	98.1	14.9	64
Solukhumbu	23,758	89.4	95.8	62.9	75.3
Okhaldhunga	32,466	85.2	98	42	70.6
Khotang	42,647	80.5	98.7	31.2	63.2
Udayapur	66,514	79.6	92	51.4	51.5
Saptari	121,064	97.7	93.6	42.5	19.6
Siraha	117,929	90.7	95.1	67.8	20.6
Dhanusa	138,225	90.5	88.2	74.5	34
Mahottari	111,298	91.2	95.2	63.6	27.1
Sarlahi	132,803	90.9	92.6	47.1	25.6
Sindhuli	57,544	67.4	91.7	38	33.3
Ramechhap	43,883	82.9	96.6	46	63.1
Dolakha	45,658	78.5	94.7	82.1	69.5
Sindhupalchok	66,635	82.3	92.8	88.8	63.9
Kavrepalanchok	80,651	86.3	79.1	88.1	72.8
Lalitpur	109,505	80.1	18.4	97.6	95.6
Bhaktapur	68,557	89.2	26.8	98.4	96.9
Kathmandu	435,544	77.2	7.9	98.9	98.8
Nuwakot	59,194	89.4	90.6	83.7	59
Rasuwa	9,741	88.3	90.1	71.7	56.5
Dhading	73,842	86.3	84.9	62.9	70.3
Makwanpur	86,045	81.1	75.8	72.8	59.5
Rautahat	106,652	97	95.5	47.3	23.4
Bara	108,600	97.3	92.4	69	26.8
Parsa	95,516	96.8	82.7	73.1	34.3
Chitawan	132,345	92.6	50	86.3	94.1
Gorkha	66,458	65.4	84.8	76.7	73
Lamjung	42,048	89.5	70	77.1	80.9

(Table continues...)

(Annex 8.1 continued...)

District	Household	Improved source of drinking water (%)	Solid fuel used for cooking (%)	Electricity used for lighting	Having toilet facility (%)
Tanahu	78,286	81.3	68.4	77.5	83.7
Syangja	68,856	86.9	82.4	86.7	89.6
Kaski	125,459	93.7	32.8	95.8	99.1
Manang	1,448	97.9	98.3	89.2	65.3
Mustang	3,305	92.1	79.5	71.5	63.3
Myagdi	27,727	88.1	86.8	68.8	81.4
Parbat	35,698	83.5	86.5	80.4	90.2
Baglung	61,482	89.8	89	82.1	80.1
Gulmi	64,887	90.3	92.5	64.4	81.6
Palpa	59,260	81.6	80.9	73.2	76.3
Nawalparasi	128,760	92.5	77.2	81.4	61.7
Rupandehi	163,835	98.5	61.1	81.2	58.2
Kapilbastu	91,264	96.4	88	64.3	31
Arghakhanchi	46,826	80.6	93.9	59.6	71.5
Pyuthan	47,716	80.1	95.6	53.8	71
Rolpa	43,735	77.8	97.7	21.6	21.3
Rukum	41,837	74.3	98.3	14.8	34.5
Salyan	46,524	60.8	98.1	14.6	28.6
Dang	116,347	68.4	80.8	64.9	60.7
Banke	94,693	96.6	76.2	69.1	47.9
Bardiya	83,147	98.3	88.9	62.7	48.5
Surkhet	72,830	66.6	86.1	43.8	71.2
Dailekh	48,915	54.2	98	13.7	48.7
Jajarkot	30,468	56.7	99.5	4	43.6
Dolpa	7,466	65.1	99.5	23.1	50.5
Jumla	19,291	80.6	99.3	29.5	69.1
Kalikot	23,008	59.4	98.7	11.7	56.5
Mugu	9,600	76.4	99.9	14	47.8
Humla	9,437	70.1	98.4	31.4	50.1
Bajura	24,888	69.3	99.7	23	38
Bajhang	33,773	69.6	99.3	17.6	29.5
Achham	48,318	60.6	99.3	18.6	47.2
Doti	41,383	66.3	96.6	30.3	41.6
Kailali	142,413	94.6	86.8	70.9	49
Kanchanpur	82,134	97.5	83.1	75.7	54.8
Dadeldhura	27,023	73.9	97	48.2	58.3
Baitadi	45,167	73.9	98.4	25	42.6
Darchula	24,604	83.5	93.7	27	46.5

Source: Central Bureau of Statistics (2012). National Population and Housing Census, National Report.

CHAPTER 9

STRUCTURE AND CHARACTERISTICS OF NEPALESE HOUSING

Dr. Laxman Singh Kunwar[1]

Abstract

*This chapter examines the situation of housing structure and characteristics in Nepal. The existing housing situation depends on the level of economic development, climate conditions and available materials needed for the construction of houses. This chapter is based on the census data on housing and household of 1991, 2001 and 2011. The changes in housing structure, ownership, head of household by sex and caste/ethnicity, as well as their distribution on the basis of urban/rural, ecological zone and development regions have been analysed. The type of house on the basis of construction has gradually shifted from 'kachchi' to 'ardha kachchi' and 'ardha kachchi' to 'pakki'. Ownership of house has shifted from own type to rented type of ownership. Ownership of housing in Tarai and eastern development regions were found to be comparatively low. Most of the houses in Nepal were eleven to twenty years old with single floors. The average household number per house has increased mainly in urban areas of Nepa*l.

9.1. Introduction

Housing is regarded as an indicator of human civilisation. The variation in the structure of houses in Nepal is apparent due to geographical location, climate, available construction materials and the level of economic development. Individuals and their family live together to run and regulate their lives within a house, which supports, covers and protects individuals and their other properties as well. According to the UN, a building or housing is any independent free-standing structure comprising one or more rooms or space, covered by a roof and usually enclosed within external walls or dividing walls that extend from the foundation to the roof. It is designed for residential, agricultural, commercial, industrial or cultural purposes, or for the provision of services. In some instances, buildings may not conform to the definition outlined above and may consist of a roof with supports only. These include garages, wayside vegetable stalls and poultry pens, where there may or may not be external walls extending from the foundation to the roof as specified (UN, 2013). Housing acts as a focus of economic activity, a symbol of achievement, social acceptance and an element of urban growth.

Nowadays, the trend of population concentrated in urban areas is increasing with a corresponding lack of space for housing. Apartment complexes are compensating for the lack of spaces in urban areas for housing purposes. Even though houses and apartments are both dwelling units, there are basic differences in the way individuals use and perceive this structure in relation to privacy, independence and commonalities. Since the last decade, the construction of apartments has increased in urban areas of Nepal, mainly in the Kathmandu valley. This is mainly due to the high cost of land and, of own account construction. It is time-consuming managing construction work rather than purchasing a readymade structure.

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9.2 Data sources

The information on household structures and characteristics was very limited up to the census of 1981 in Nepal. In 1991 census information was related to household composition, household head by sex, age and marital status, type and ownership of house. In the 2001 census, information on household amenities like drinking water, electricity, toilet, cooking fuels, lighting fuels and radio/TV was collected. Complete enumeration was carried out in 52 of 58 urban centres and six rural districts. In the 2011 census, information on construction materials of foundations, walls, roofs, and storeys of house and the period of construction of houses was also collected. Gradually innovative and positive efforts have been made to collect information on housing from the 1991 census onwards in Nepal.

Housing data from surveys like the Nepal Multiple Indicator Surveillance (NMIS), the Nepal Demographic Health Survey (NDHS) and the Nepal Living Standard Survey (NLSS) are available but it has a very limited purpose and scope. Nepal is in the initial stage of collecting housing information and analysis, because in developed countries there is already a practice of a separate housing census. This chapter is mainly based on housing and household information from the 1991, 2001 and 2011 censuses of Nepal.

9.3 Terminologies and concept

Various terminologies are used for the purpose of a housing study at the international level but this chapter embraces terminologies used in the censuses of Nepal.

9.3.1 Ownership of House

The types of ownership of house in the 1991 and 2001 censuses were similarly categorised with owned, rented, rent-free, institutional and others but in the 2011 census the rent-free category was removed. According to enumerator directives, this rented free (people who were living in houses without paying anything to the owner) was added in another category.

9.3.2 Type of House

The type of houses can be categorised in various ways in a housing study. Those used are mainly: materials used in construction (foundation, outer wall and roof); location (rural, urban, semi urban); ownership; number of floors; number of rooms; and occupancy status. In the context of Nepal only the basis of materials used in construction of houses (only in walls and roofs) was collected for the information on the type of house in the 1991 and 2001 censuses. Similar categories of Pakki (both walls and roof are made of permanent construction materials like cement, brick, stone, slate, tile and galvanised sheet), Ardha Pakki (either wall or roof of house is made with permanent materials and others are made with temporary materials), Kachchi (made by non-durable materials like wood, bamboo, straw/thatch, mud, raw bricks etc. which are mainly used in both wall and roof) and other (very temporary type of residence made with non-durable materials like plastic sheet, bamboo, and straw/thatch.) were used in the 1991 and 2001 censuses.

In the 2011 census, separate information on materials used for foundations, outer walls and roofs of houses was collected. After "on the basis of materials used in house", the types of house were further classified into Pakki, Ardha Pakki, Kachchi and Other. To make data comparable with 2001 data the types of house were classified by using the same information of materials used in the outer walls and roofs of houses. Table 9.1 shows the classification of materials used for the outer walls, roofs of houses and types of house.

Table 9.1: Classification of materials used in construction of outer wall and roof of house, Nepal, 2011

Part of House	Materials used	Classification
Outer wall	1.Mud-bonded bricks/stone 2.Cement-bonded bricks/stone 3. Wood/planks 4. Bamboo 5. Unbaked brick 6. Other 7. Not stated	Pakki materials (1, 2) Kachchi Materials (3,4,5) Other (6)
Roof	1. Thatch/straw 2. Galvanised iron 3. Tile/slate 4. RCC 5. Wood/planks 6. Mud 7. Other 8. Not stated	Pakki Materials (2,3, 4) Kachchi Material (1,5,6) Other (7)

Source: CBS, 2011

A further classification of house was made by the classification of materials used in the outer walls and roof as in Table 9.2.

Table 9.2: Classification of house by materials used in outer walls and roof of house, Nepal, 2011

Materials used in wall	Materials used in roof			
	Pakki	**Kachchi**	**Other**	**Not stated**
Pakki	Pakki	Ardha Pakki	Ardha Pakki	Pakki
Kachchi	Ardha Pakki	Kachchi	Kachchi	Kachchi
Other	Ardha pakki	Kachchi	Other	Other
Not stated	Pakki	Kachchi	Other	Not stated

Source: CBS, 2011

9.3.3 Number of floors of house

The number of floors in a building consists of all storeys that are primarily above ground level and in which there are habitable rooms or office space or other space conforming to the intended use of the building. If the number of storeys varies in different parts of the building, the number usually refers to the largest number of storeys in the building. This information was not collected in previous censuses. In the 2011 census a house with a roof but no storeys was considered as a one-storey building and if the highest storey of a house only covered some space it was recorded as an additional storey of the house.

9.3.4 Year or period of construction

This refers to the age of the building or housing constructed in a certain location. This information was not included in previous censuses. Generally, where parts of a building have been constructed at different times, the year or period of construction is taken for the major part of construction. In the 2011 census if a house was not built in the same year, or constructed partially in some cases, the starting or initial year of construction was taken to determine the period of construction of the house. If rented owners did not not know the date of construction of their house, this information was collected from the owner of the house.

9.3.5 Household and head of household

The concept of household is based on the arrangements made by persons, individually or in groups, for providing themselves with food or other essentials for living. A household may be either a one-person household with the provision for his or her own food or other essentials for living without combining with any other person to form part of a multi person household. A multi person household includes a group of two or more persons living together who make common provision for food or other essentials for living. Households consisting of extended families that make common provision for food or of potentially separate households with a common head, resulting from polygamous unions, or households with a vacation or other second homes may occupy more than one housing unit. In Nepal, a single person living alone or a group of persons sharing a common kitchen and fulfilling their necessary essential by common resources and living in a particular house are regarded as a household. Since the census of 1952/54 this definition of household has been used in Nepal.

A head of household is an individual in one family setting who provides actual support and maintenance to one or more individuals, who are related to him or her through, blood, marriage, or adoption. The designation head of household, also termed head of family, is applied to one who has the authority to exercise family control and to support the dependent members founded upon a moral or legal obligation or duty. The head of household may be either male or female.

9.4 Ownership of house

Ownership of house can be considered as an indicator of socio-economic differences among people living in a society. The prevalence of home ownership is not universal; it varies from one community to another as well as from one region to another. Ownership of a house can be attributed to differences in economic circumstances and the composition of people without their own house.

9.4.1 Household ownership at national level

The owned ownership type of households in Nepal has decreased, which was nearly 93% in 1991 and slightly more than 85% in 2011 (Table 9.3). In 1991 less than 5% of households were living in rented houses but in 2011 nearly 13 % of households were living in rented houses. In each intercensal period since 1991, around 4% of households have been added to the rented category at the national level. In the 1991 and 2001 censuses the rented free category was included but in the 2011 census this category was merged in “Others” category, which may have resulted in some increment in other category type of ownership of household.

Table 9.3: Percentage distribution of household by ownership of house occupied, Nepal, 2011

Ownership of House	1991	2001	2011
Owned	92.6	88.3	85.3
Rented	4.7	8.9	12.8
Rent-free	1.6	0.2	-
Institutional	0.5	2.4	0.6
Others	0.1	0.2	1.3
Not stated	0.5	-	-
Total %	100.0	100.0	100.0
Total (N)	**33,28,721**	**41,74,374**	**54,23,297**

Source: Central Bureau of Statistics (2003) Population Monograph of Nepal vol. I, Table 5.4
Central Bureau of Statistics (2014) National Report-1, Table 1

9.4.2 Household by ownership & by rural/urban

In urban areas, more than 56% and in rural areas 92% of households were in owned category (Table 9.4). There has been a decreasing trend of owned and institutional types of households in both urban and rural areas. The rented category has increased by more than 5% and 3% in urban and rural areas respectively. The increase in rented category in urban areas can be explained by rural to urban migration of the population for better opportunities. In rural areas there has been an increased trend of the development of small towns and markets centres, and people have been attracted to these areas to carry out different socio-economic activities. The increased trend of rented type of household in rural areas is associated with these newly established towns and market centres. Data on the ownership by institutional household from 2001 at the national level is not compatible with both previous and later censuses, but these two censuses have shown similar trends at the national level.

Table 9.4: Percentage distribution of household by ownership of house by urban/ rural, 2011

Ownership of House	Urban		Rural	
	2001	2011	2001	2011
Owned	60.9	56.8	93.4	92.0
Rented	34.8	40.2	4.0	6.3
Rent-free	0.5	-	0.2	-
Institutional	3.7	1.7	2.2	0.003
Others	0.3	1.3	0.2	1.3
Not stated	-	-	-	-
Total %	100.0	100.0	100.0	100.0
Total (N)	**664.507**	**1,045,575**	**3,509,867**	**4,377,722**

Source: Central Bureau of Statistics (2003) Population Monograph of Nepal vol. I, Table 5.4
Central Bureau of Statistics (2014) National Report-1, Table 1

9.4.3 Household ownership by ecological zones

Most households have owned in all ecological zones in all three censuses of 1991, 2001 and 2011 (Table 9.5). In all ecological zones the rented category of ownership has gradually increased. In the Mountain and Tarai, there was no significant change during the intercensal period of 2001 and 2011 in owned category but Hill region has shown a remarkable change. In 2011, more than 19% of owners were in the rented category in Hill region, which was nearly 12% in 2001. There is a decline in trend of owned household and an increased trend of rented category,

mainly due to the inclusion of Kathmandu and Pokhara Valley and various urban areas within the Hill region and the flow of migration into these urban places.

Table 9.5: Percentage distribution of household by ownership of house occupied for ecological zones.

Ownership of House	Mountain			Hill			Tarai		
	1991	2001	2011	1991	2001	2011	1991	2001	2011
Owned	95.2	92.7	92.3	92.0	85.5	78.8	92.8	90.3	90.7
Rented	2.2	4.0	5.6	5.6	11.8	19.3	4.1	6.7	7.3
Rent-free	1.7	2.6	-	1.4	2.2	-	1.9	2.6	-
Institutional	0.4	0.4	0.006	0.4	0.2	0.006	0.5	0.2	0.006
Others	0.1	0.3	1.5	0.1	0.1	1.4	0.1	0.2	1.4
Not stated	0.4	-	-	0.5	-	-	0.5	-	-
Total %	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Total (N)	**274135**	**285213**	**363698**	**1558493**	**1951191**	**2532041**	**1496093**	**1937970**	**2527558**

Source: Central Bureau of Statistics (2003) Population Monograph of Nepal Vol. I, Table 5.5.
Central Bureau of Statistics (2014) National Report-1, Table 1.

9.4.4 Households by ownership of houses by development regions

In all development regions, most households are in the owned category. There are no significant changes in owned category in EDR, MWDR and FWDR between 2001 and 2011. During the same period, the owned category has decreased in CDR by 6% and in WDR by 4% respectively. In all development regions the rented category has increased, the increment in CDR is more noticeable (6.4% in 1991 to 20.3% in 2011) and comparatively less in FWDR (2.1% in 1991 to 3.9% in 2011). Kathmandu and Pokhara valley, and increased urban centres with trade, commerce and industries, have increased the percentage of the rented category which is more remarkable in CDR and WDR. The rented free category was excluded in the 2011 census and was incorporated in 'others' category but it has no significance presence like the institutional category at the development region level (Annex 9.1).

9.5 House ownership by type of house

9.5.1 House ownership by types of house at national and rural/urban level

The construction of Pakki and Ardha Pakki types of house with own ownership has increased but Kachchi and other types of house have decreased significantly compared to 2001. The growth pattern of Pakki and Ardha Paki houses in rural area is similar to the national level but Ardha Pakki houses have decreased in urban areas with a significant increase in the number of Pakki houses. Rural to urban migration of people in Nepal has increased, and most migrants plan to settle their families in urban areas in the long run. During this period land and housing planning activities have increased mainly in urban areas, which have also contributed to an increased percentage of own and rented households in urban areas. Households living in rented and institutional/other have shifted to permanent or Pakki types of house and away from Kachchi and Ardha Kachchi houses. The gradual increase in own house ownership with Pakki types of house shows the improvement in the living conditions of people.

Table 9.6: Percentage of household by ownership and type of house for urban/ rural 2011.

House Ownership	Type of House	National		Urban		Rural	
		2001	2011	2001	2011	2001	2011
Own	Pakki	33.3	53.9	61.9	80.0	29.8	49.0
	Ardha-pakki	30.3	37.7	17.7	14.7	31.8	37.6
	Kachchi/ other	36.4	11.4	20.5	4.4	38.3	11.4
	Total	88.3	85.3	60.9	56.8	93.4	92.0
Rented	Pakki	71.0	88.2	81.1	97.7	54.3	82.7
	Ardha-pakki	17.5	7.7	12.3	4.5	26.1	12.5
	Kachchi/ other	11.5	4.1	6.6	3.7	19.6	4.8
	Total	8.9	12.8	34.8	40.2	4.0	6.3
Institutional/ Other	Pakki	30.9	57.5	54.0	77.3	23.4	49.1
	Ardha-pakki	31.2	26.5	25.1	15.1	33.3	31.3
	Kachchi/ other	37.8	16.0	20.9	7.6	43.4	19.6
	Total	2.8	1.9	4.4	3.0	2.5	1.3

Source: Central Bureau of Statistics (2003) Population Monograph of Nepal Vol. I, Table 5.7.
Central Bureau of Statistics (2014) National Report-1

9.5.2 House ownership and types of house by ecological zones

In all ecological zones, own Pakki houses have increased with a corresponding decrease in the number of households residing in Kachchi houses (Table 9.7). In both Mountain and Hill region, people living in Ardha Kachchi types of house decreased but in the Tarai region it has increased by nearly 16% from the 2001 census. During the same period the Kachchi type of house in Tarai decreased by nearly 40%. This shows the gradual shift of households from Kachchi to Ardha Kachchi in the Tarai Region. In owned category type of house, more than two thirds in Hill and nearly 60% of households in Mountain were living in Pakki types of house but in the Tarai region households living in Ardha Kachchi types of house were dominant, followed by Pakki type of house. In all ecological zones, the percentage of households living in rented and institutional/other ownership were mainly living in Pakki types of house followed by Ardha Kachchi in 2011.

Table 9.7: Percentage of household by ownership and type of house for ecological zones 2011

House Ownership	Type of House	Mountain		Hill		Tarai	
		2001	2011	2001	2011	2001	2011
Own	Pakki	45.2	58.8	47.4	69.7	18.1	39.4
	Ardha-pakki	41.8	37.0	33.1	26.0	25.9	41.8
	Kachchi/ other	13.0	4.2	19.5	4.3	56.0	18.8
	Total	92.7	92.3	85.5	78.8	90.3	90.7
Rented	Pakki	48.0	67.7	80.2	91.5	56.6	81.6
	Ardha-pakki	35.3	25.7	13.4	4.8	23.4	13.3
	Kachchi/ other	16.7	6.6	6.5	3.7	20.0	5.1
	Total	4.0	5.6	11.8	19.3	6.7	7.1
Institutional/ Other	Pakki	29.3	47.8	41.0	72.7	22.3	44.8
	Ardha-pakki	41.7	38.0	33.6	20.3	27.5	36.6
	Kachchi/ other	29.0	14.2	25.4	7.0	50.3	24.6
	Total	**3.3**	**1.5**	**2.6**	**1.4**	**3.0**	**1.4**

Source: Central Bureau of Statistics (2003) Population Monograph of Nepal Vol. I, Table 5.8.
Central Bureau of Statistics (2014) National Report-1,

In development regions, variations can be observed in the type of house by household. Of households having own house in EDR, nearly 50% of households were found living in Ardha-Kachchi type houses, but in other development regions a large section of households were living in Pakki type houses (Table 9.8). According to the 2011 census, in WDR more than three-fourths of households with own house were living in Pakki types of houses, followed by FWDR, CDR and MWDR respectively. This showed a similar trend with the 2001 census. In all development regions rented households occupied Pakki types of house. Among the development regions, EDR has comparatively less rented households living in Pakki houses at more than 70% while in CDR and WDR there are more than 90%, and in MWDR and FWDR more than 80% of rented households living in Pakki types of house. The institutional/other type of ownership also shows a similar trend of comparatively less percentage of households living in Pakki houses than other development regions.

Table 9.8: Percentage of household by ownership and type of house for development region 2011

House ownership	Type of House	EDR		CDR		WDR		MWDR		FWDR	
		2001	2011	2001	2011	2001	2011	2001	2011	2001	2011
Own	Pakki	11.6	29.2	35.5	59.5	50.8	76.8	25.4	45.6	52.8	60.7
	Ardha-pakki	33.0	49.6	29.3	31.1	26.7	17.9	39.2	43.1	23.5	32.4
	Kachchi/ other	55.4	21.2	35.2	9.4	22.6	5.3	35.4	11.3	23.7	6.9
	Total	88.9	89.0	84.3	77.8	89.1	85.4	92.9	93.0	94.5	94.7
Rented	Pakki	43.5	70.6	82.1	92.1	73.3	91.9	63.9	84.0	60.6	81.0
	Ardha-pakki	33.8	23.4	11.0	3.7	16.7	5.6	21.1	11.7	19.9	14.4
	Kachchi/ other	22.7	6.0	6.9	4.2	10.0	2.5	15.0	4.3	19.6	4.6
	Total	1.7	8.2	13.3	20.3	8.1	12.7	4.4	5.8	2.9	3.9
Institution-al/ Other	Pakki	19.3	37.2	19.3	64.3	40.4	78.7	22.9	53.2	33.9	64.0
	Ardha-pakki	29.7	40.3	29.7	19.9	31.3	15.4	37.2	31.2	33.5	21.1
	Kachchi/ other	51.0	22.5	51.0	15.8	28.3	5.9	39.9	15.6	32.6	14.9
	Total	**3.6**	**1.9**	**3.6**	**1.3**	**2.8**	**1.3**	**2.7**	**0.01**	**2.6**	**0.01**

Source: Central Bureau of Statistics (2003) Population Monograph of Nepal Vol. I, Table 5.9.
Central Bureau of Statistics (2014) National Report-1

9.5.3 Household head by ownership of house

Table 9.9 shows the distribution of type of house ownership and sex of household head in 2011. The head of household is responsible to provide actual support and maintenance to his/her household members. According to the 2011 census in all categories of households 25.74% were female-headed households. Some variations on female-headed households can be observed on the basis of ownership of house compared to the national level data of female-headed households. In rented and others type of households the percentage of female headed households are comparatively more than the national level. In urban areas, more than one third, and in ecological and development regions more than 30% of female-headed households are living in rented type of ownership. This is probably due to the impact of foreign labour migration by male household members. In others types of households, the female headed household is also considerably higher than the national level female headed households. This may be due to females who have received shelter without paying rent at their relatives' houses and other places.

The own type ownership of households represents the national level data of male and female-headed households. More than 85% of households belong in the own type of house in Nepal, therefore there is a more compatible result between the national level data of head of household and own type of house. In institutional type of head of household, the female-headed households were comparatively lower than the national representation of female-headed households. This shows that females have institutionally less ownership and responsibility compared to own, rented and other type of ownership.

Table 9.9: Percent distribution of type of house ownership and sex of household head, Nepal, 2011

Area	Ownership of House											
	Own			Rented			Institutional			Others		
	Sex of Head		Total	Sex of Head		Total	Sex of Head		Total	Sex of Head		Total
	Male	Female		Male	Female		Male	Female		Male	Female	
Rural/Urban												
Rural	73.2	26.8	593842	69.8	30.2	420483	80.4	19.6	17392	66.0	34.0	13858
Urban	75.6	24.4	4029811	65.5	34.5	274218	81.5	18.5	16921	65.9	34.1	56772
Total	75.2	24.8	4623653	68.1	31.9	694701	81.0	19.0	34313	65.9	34.1	70630
Ecological zones												
Mountain	77.5	22.5	335521	72.6	27.4	20363	85.9	14.1	2334	64.9	35.1	5480
Hill	70.1	29.9	1995266	67.4	32.6	489928	79.7	20.3	16291	60.7	39.3	30556
Tarai	79.3	20.7	2292866	69.7	30.3	184410	81.6	18.4	15688	70.7	29.3	34594
Total	75.2	24.8	4623653	68.1	31.9	694701	81.0	19.0	34313	65.9	34.1	70630
Development Regions												
EDR	76.1	23.9	1096104	68.1	31.9	101048	78.4	21.6	9997	70.7	29.3	23594
CDR	80.6	19.4	1526561	71.1	28.9	399394	80.8	19.2	13254	69.9	30.1	23029
WDR	66.1	33.9	909773	58.7	41.3	135570	81.3	18.7	6464	51.9	48.1	13792
MWDR	74.7	25.3	646198	67.7	32.5	40521	85.9	14.1	2571	63.1	36.9	5724
FWDR	74.1	25.9	445017	75.3	24.7	18168	88.0	12.0	2027	67.3	32.7	4491
Total	**75.2**	**24.8**	**4623653**	**68.1**	**31.9**	**694701**	**81.0**	**19.0**	**34313**	**65.9**	**34.1**	**70630**

Source: Central Bureau of Statistics (2014) National Report-1

9.5.4 Household head by Caste/ethnicity and ownership of house

Household head with house ownership by caste/ethnicity can be considered as the status of different caste/ethnic groups of people. In urban areas nearly one fifth of houses of own type's head of households were Hill Brahmin, followed by Hill Chhetree and Newar respectively. In rural areas, one fifth of head of households were Hill Chhetree, followed by Mountain Janajati-A and Hill Brahmin respectively. In rented type of ownership nearly one fourth of heads of households in urban areas were Hill Brahmin, followed by Hill Chhetree and Mountain Janajati-A . In rural areas more than one fifth of heads of households of rented type were Mountain Janajati-A, with Hill Chhetree and Brahmin occupying second and third position. In institutional type of ownership, Hill Brahmin and Chhetree and Mountain Janajati-A respectively occupied a large share of head of household and a similar trend was observed in rural areas Similarly, in others type of ownership category in urban areas, Mountain Janajati-A constituted nearly one fourth of heads of household, followed by Hill Chhetree and Brahmin, the same position was observed in rural areas of other own type of ownership. Hill Brahmin and Chhetree, Newar, Mountain Janajati-A and B, Hill Dalit, Madeshi and other caste-A occupy a large share of heads of households on the basis of rural/urban as well as ecological zones of Nepal (Annex 9.2).

9.6 Construction Materials used in Roof and Outer Wall of House

Housing material is any material that is used for construction purposes of houses. There are many naturally occurring substances, such as clay, rocks, sand, wood, and even twigs and leaves. In addition, of naturally occurring substances or materials, many man-made products are used for the construction of houses. The carpentry, plumbing, insulation and roofing work provide the make-up of internal and outer structures of houses.

According to the 2011 census, galvanised iron, tile/slate, RCC and thatch/straw were respectively much more used as raw materials for the roof of houses at the national level. For the roof of houses in urban areas RCC, galvanised iron and tile/slate were used more, whereas in rural areas tile/slate, galvanised iron and thatch/straw were respectively used in most of the roofs of houses (Table 9.10). In Mountain and Tarai regions, tile/slate, and in Hill region, galvanised iron, were the leading materials used in roofs of houses. Galvanised iron in EDR and WDR, RCC in CDR and tile/slate in MWDR and FWDR were raw materials mainly used in roofs of houses in development regions. More than one third and nearly two thirds of roofs of houses in EDR and FWDR respectively were made using thatch/straw and tile/slate, which reflects the influence of naturally available materials used in roofs of houses. After CDR the roofs of houses of WDR are made of RCC which shows the living conditions of people of these two regions are comparatively better than other development regions of Nepal.

Table 9.10: Percent distribution of households by construction materials used in roof of house

Area	Total	Roof of house							
		Thatch/ straw	Galvan-ised iron	Tile/ slate	RCC	Wood/ planks	Mud	Oth-ers	Not stated
Nepal	5,423,297	19.5	28.8	26.7	22.5	0.8	1.1	0.4	1.2
Urban/Rural									
Urban	1,045,575	3.6	25.5	8.7	59.8	0.3	0.02	0.02	2.0
Rural	4,377,722	22.7	29.0	31.0	13.6	0.9	1.3	0.4	1.0
Ecological zones									
Mountain	363,698	20.4	24.9	32.9	2.4	4.2	13.0	1.4	0.9
Hill	2,532,041	19.0	31.6	22.1	24.7	0.5	0.4	0.3	1.2
Tarai	2,527,558	18.9	25.4	30.3	23.2	0.6	0.0	0.4	1.3
Development Regions									
EDR	1,230,743	33.2	44.0	8.5	11.5	1.0	0.2	0.8	0.9
CDR	1,962,238	10.0	22.6	31.5	32.9	0.9	0.1	0.2	1.8
WDR	1,065,599	13.7	37.2	18.7	28.4	0.6	0.3	0.3	0.9
MWDR	695,014	31.6	15.7	31.8	11.3	0.8	7.6	0.5	0.8
FWDR	469,733	13.3	8.9	64.6	10.7	0.5	0.5	0.6	0.1

Source: Central Bureau of Statistics (2014) National Report-1, Table 4

Mud-bonded brick/stone, cement-bonded bricks/stone, bamboo and wood/planks were the materials used in outer walls of houses of Nepal. Cement-bonded brick/stone and mud-bonded brick/stone were materials mainly used in outer walls in urban and rural areas respectively. Similarly mud bonded brick/stone in Mountain and Hill region and bamboo in Tarai region were mostly used in walls of houses. On the basis of development regions, bamboo in EDR, cement bonded brick/stone in CDR, mud bonded brick/stone in WDR, MWDR and FWDR were materials used for the walls of houses (Table 9.11).

The materials used in roofs and outer walls of houses are primarily influenced by the availability of local materials. The improvement in economic conditions has shown a gradual impact on materials used for roofs and outer walls of houses. The presence of RCC roofs and cement-bonded brick/stone in CDR, followed by WDR, reflects the comparatively better living conditions of people living in these two regions than other development regions of Nepal.

Table 9.11: Percent distribution of households by construction materials used in outer wall of house

Area	Total	Outer wall of house						
		Mud bonded brick/ stone	Cement bonded brick/ stone	Wood/ planks	Bamboo	Unbaked brick	Others	Not stated
Nepal	5,423,297	41.4	28.7	5.3	20.2	1.1	2.1	1.1
Urban/Rural								
Urban	1,045,575	17.5	69.4	2.4	7.1	0.7	1.0	1.9
Rural	43,77,722	47.3	19.0	6.3	23.5	1.2	2.3	0.1
Ecological zones								
Mountain	363,698	89.5	4.6	1.5	3.0	0.2	0.5	0.8
Hill	2,532,041	62.4	28.8	3.4	3.5	0.3	0.4	1.1
Tarai	2,527,558	13.4	32.2	7.7	39.5	2.0	4.0	1.2
Development Regions								
EDR	1,230,743	26.8	21.8	6.5	42.9	0.2	0.9	0.9
CDR	1,962,238	30.4	40.0	4.0	22.5	0.5	0.9	1.7
WDR	1,065,599	56.7	32.7	2.3	4.3	0.6	2.6	0. 8
MWDR	695,014	66.2	12.0	4.4	5.3	5.8	5.6	0.8
FWDR	469,733	54.1	16.1	15.7	9.4	0.4	3.4	0.9

Source: Central Bureau of Statistics (2014) National Report-1, Table 3.

9.7 Types of House

Mainly geographical location, including climate and available construction materials, determines the types of houses. In addition, types of houses are associated with the socio-economic status of people. Types of houses can also be regarded as the combination of environment or climate with available construction materials, economic status and civilisation of a society.

In Nepal, the Pakki type of house is an increasing trend. In 1991 less than 24% of houses were Pakki type but in 2011 more than 58% of houses belonged in this category (Table 9.12). The data shows that during the period of 1991 to 2011 the Kachchi type of house decreased from 50% to 10%. There has been a significant shift in the pattern of types of houses from Kachchi to Ardha Pakki and Ardha Pakki to Pakki during each intercensal period. According to the 2011 census less than 10% of houses were Kachchi and more than 58% of houses were Pakki, which indicates the gradual improvement of the living conditions of the Nepalese people.

Table 9.12: Percentage distribution of household by types of house, Nepal 2011

Type of House	Total		
	1991	2001	2011
Pakki	23.5	36.6	58.4
Ardha-Pakki	24.8	29.2	31.0
Kachchi	49.7	33.5	9.5
Others	2.0	0.7	0.1
Not Reported	-	-	1.0
Total %	**100.0**	**100.0**	**100.0**
Total (N)	**3,328,721**	**4,174,374**	**5,423,297**

Source: Central Bureau of Statistics (2003) Population Monograph of Nepal Vol. I, Table 5.1.
Central Bureau of Statistics (2014) National Report-1,

The changing patterns in the types of houses can be observed on the basis of urban/rural areas. During the intercensal period of 2001 to 2011, there has been an increment of 17% and nearly 22% of Pakki houses in urban and rural areas respectively. According to the 2011 census more than 85% and 52% of houses in urban and rural areas respectively attained the criteria of Pakki type of house. Even in rural areas of Nepal, only slightly more than 11% of houses were Kachchi type, which shows the improving living conditions of people even in rural areas (Table 9.13).

Table 9.13: Percentage distribution of household by types of house for urban/ rural residence, 2011

Type of House	Urban		Rural	
	2001	2011	2001	2011
Pakki	68.2	85.2	30.6	52.0
Ardha-pakki	16.1	10.6	31.7	35.9
Kachchi	15.2	2.4	36.9	11.2
Others	0.4	0.0	0.8	0.1
Not Reported	-	1.8	-	0.8
Total %	**100.0**	**100.0**	**100.0**	**100.0**
Total (N)	**664,507**	**1,045,575**	**3,509,867**	**4,377,722**

Source: Central Bureau of Statistics (2003) Population Monograph of Nepal Vol. I, Table 5.1
Central Bureau of Statistics (2014) National Report-1,

The Pakki type of households has significantly increased in all ecological zones but in the Tarai zone there was a lesser percentage of Pakki houses compared to Mountain and Hill zones. After 1991, or during a period of twenty years, in the Tarai zone the Pakki type of house has increased by more than four times, whereas this increment was more than two times in Hill and slightly less than two times in Mountain zone. Ardha Pakki type of house has gradually decreased in Mountain and Hill zones but gradually increased in Tarai zone. The living conditions of people in the Tarai zone are of a comparatively lower status than Mountain and Hill zones of Nepal on the basis of type of house. In all ecological zones the Kachchi type of house has decreased which shows the gradual improvement of the housing situation in Nepal. Available construction materials reflect the types of house on the basis of ecological zones. For example, in Mountain and Hill regions stones, and in Tarai straw/thatch are available to construct houses (Annex 9.3).

On the basis of development regions, there is an increasing trend of Pakki and a decreasing trend of Kachchi type of houses in all development regions. A more significant improvement can be observed in WDR than other development regions. More than three fourths of houses in WDR, two thirds of houses in CDR, and less than two thirds of houses in FWDR, nearly 50% of houses in MWDR and less than one third of houses in EDR were Pakki type houses in 2011. The Ardha Pakki type of house has increased in EDR, MWDR and FWDR but has decreased in CDR and WDR. This shows that in EDR, MWDR and FWDR there has been a shift in housing construction from Kachchi to Ardha Kachchi but in CDR and WDR the shift has been from Ardha Kachchi to Pakki type. At the national level EDR is more socially and economically developed than MWDR and FWDR but the housing status of the people of EDR is behind these two regions. There may be various reasons behind this but the difference on available materials to construct houses is probably the most important factor. (Annex IV)

9.8 Distribution of House

The distribution of houses in a country depends on available climate, soil, minerals, level of economic development, population growth and polices of the government. In the context of Nepal the information on distribution of

houses for residential purpose has been carried out by the census. The distribution of houses and households in Nepal is not uniform on the basis of urban-rural, ecological zones and development regions. More than 85% of houses are located in rural areas and less than 15% in urban areas (Table 9.14). According to the 2011 census, on average there are 1.21 households in one house in Nepal, which has slightly increased from the 2001 census. In both urban and rural areas the average household per house has increased compared to the previous census. In urban areas the average household per house is higher by 0.5 than rural houses and the difference has increased since the 2001 census. In Mountain and Tarai zones there have not been any changes but in Hill zone the average household per house has slightly increased. The average household per house in FWDR has slightly decreased but in the remaining development regions only a slight increment is observed compared to the previous census. CDR has comparatively more average households per house, which may correspond to the concentration of opportunities in the Kathmandu valley, and growing trade and commercial activities, mainly in Birgunj, Chitwan and Makawanpur.

Table 9.14: Distribution of house, household and average household per house for urban-rural, ecological zones and development regions, 2011

Area	House	Household	Average household per house	
			2001	2011
Nepal	4,466,931	5,427,302	1.16	1.21
Urban	640,861	1,047,297	1.52	1.63
Rural	3,826,070	4,380,005	1.11	1.14
Ecological Zone				
Mountain	320,529	364,120	1.13	1.13
Hill	1,996,651	2,534,430	1.17	1.26
Tarai	2,149,751	2,528,752	1.16	1.17
Development Region				
Eastern	1,073,765	1,231,505	1.11	1.14
Central	1,467,518	1,964,045	1.25	1.33
Western	903,396	1,066,362	1.11	1.18
Mid-western	620,687	695,419	1.09	1.12
Far-western	401,565	469,971	1.19	1.17

Source: Central Bureau of Statistics (2003) Population Monograph of Nepal Vol. I, Table 5.10.
Central Bureau of Statistics (2014) National Report-1

The percentage of households living in a single house has decreased compared to the 2001 census. At the national level the percentage living in a single house decreased by more than 2% and a similar pattern can be observed in rural areas but in urban areas it has decreased by nearly 4%. Houses having 2-3 households have increased four fold in the context of urban and rural areas (Table 9.15). In Mountain region there was no change compared to Hill and Tarai regions. Hill and Tarai regions respectively decreased by 4% and 2% of households living in a single house and shifted to houses having 2-3 households. Similarly, in the development regions the percentage of houses having one household decreased by 2% to 4%. The decreased percentage of one household in a single house and an increment in two to three and four and more households in a single house shows the gradual change in behaviour of people living together by sharing available common facilities in a house, as well as the impact of housing development or apartments mainly in urban areas.

Table 9.15: Percentage distribution of house by number of household residing in the house for rural-urban, ecological zones and development regions, 2011

Area	Percentage of House Having Number of Household						Total House (2011)
	1		2-3		4+		
	2001	2011	2001	2011	2001	2011	
Nepal	90.17	87.5	8.48	10.5	1.35	2.0	4,466,931
Urban	75.14	71.2	18.68	21.0	6.18	7.8	640,861
Rural	92.25	90.2	7.07	8.8	0.68	1.0	3,826,070
Ecological Zone							
Mountain	90.54	90.0	8.82	9.4	0.64	0.6	320,529
Hill	90.28	86.2	8.17	10.9	1.55	2.9	1,996,651
Tarai	90.02	88.3	8.73	10.4	1.25	1.3	2,149,751
Development Region							
Eastern	92.74	90.2	6.36	8.7	0.91	1.1	1,073,765
Central	86.65	83.3	10.86	12.9	2.49	3.8	1,467,518
Western	92.39	88.8	6.85	9.6	0.76	1.6	903,396
Mid-western	93.36	91.0	6.13	8.3	0.51	0.7	620,687
Far-western	85.99	87.0	13.04	12.2	0.97	0.8	401,565

Source: Central Bureau of Statistics (2003) Population Monograph of Nepal Vol. I, Table 5.11.
Central Bureau of Statistics (2014) National Report-1

9.9 Number of Floor of House

In Nepal, a higher percentages of houses have only one floor, followed by two, three and four to five floors respectively at the national level in 2011 (Table 9.16). More houses in both urban and rural areas only had one floor. The percentage of houses in rural areas with up to 2 floors was higher than urban areas, conversely there were more houses with 3 floors and above in urban compared to rural areas. It shows the differences in house structure between rural and urban areas. Nearly three fourths of houses in Tarai have only one floor whereas nearly 50% of houses in Mountain and Hill have a second floor. Mountain zone has a higher percentage of houses with a third floor. This may be due to the fact that it is a usual practice of people in this region to make the first floor an animal shelter. EDR has the largest percentage of houses with only one floor flowed by WDR, MWDR, CDR and FWDR respectively. A higher percentage of houses with a second floor was found in FWDR. As in urban areas, CDR has a higher percentage of houses with three floors. Generally, it can be observed that the number of floors of houses in Nepal is influenced by both traditional practices and socio-economic development.

Table 9.16: Percent Distribution of Number of Floor of House/Housing Unit, Nepal, 2011

Area	Total (N)	Number of floor					
		1 floor	2 floor	3 floor	4-5 floor	6-7 floor	8 floor and +
Nepal	5,423,297	44.0	37.0	15.2	3.5	0.2	0.02
Urban/Rural							
Urban	1,045,575	37.9	28.3	19.3	13.4	1.0	0.01
Rural	4,377,722	45.5	39.0	14.2	1.2	0.02	0.003
Ecological Zones							
Mountain	363,698	10.6	47.5	40.5	1.1	0.02	0.0
Hill	2,532,041	19.1	48.6	24.9	6.9	0.4	0.04
Tarai	2,527,558	73.1	23.9	1.8	0.5	0.02	0.001
Development Regions							
EDR	1,230,743	57.0	32.4	9.8	0.7	0.02	0.002
CDR	1,962,238	39.3	32.9	18.6	8.5	0.5	0.06
WDR	1,065,599	43.0	44.1	11.8	1.0	0.02	0.0
MWDR	695,041	41.0	40.3	18.1	0.4	0.01	0.0
FWDR	469,703	36.1	45.0	18.6	0.4	0.003	0.0

Source: Central Bureau of Statistics (2014) National Report-1

9.10 Year of Construction

The year of construction of houses is important as it is useful to know the number of new to older houses constructed in the country. This is new information and there is no competitive data in Nepal. More than one fourth of houses in Nepal were constructed 11-20 years ago, followed by 6-10 years ago, and less than 5 years and 21-50 years ago respectively (Table 9.17). More than two thirds of houses were made within the period of twenty years, which shows that most Nepalese houses are newly constructed. In both urban and rural areas there were more houses built in the previous 11-20 years. In Tarai and FWDR comparatively a higher percentage of houses were built within the last five years, but in Mountain, Hill, EDR, CDR, WDR and MWDR a higher percentage of houses were built 11-20 years ago. Even with the lowest percentage, the presence of houses built more than five hundred years ago in all areas as shown in Table 9.17 is a matter of pride and new knowledge about the development of houses and their structure in Nepal can be learned from these. The presence of not sated category of nearly one in ten houses at the national level has made it difficult to draw any firm conclusion on the year of construction of houses in Nepal.

Table 9.17: Percent distribution of household by year of construction of house/housing unit, Nepal, 2011

Area	Total	Year of Construction (in Years)								
		□5	6-10	11-20	21-50	51-100	101-150	151-500	□ 500	Not stated
Nepal	5423297	21.2	21.7	26.5	17.3	2.9	0.2	0.2	0.02	9.9
Urban/Rural										
Urban	1045575	20.7	22.4	26.7	17.0	3.0	0.2	0.2	0.03	9.6
Rural	4377722	21.3	21.5	26.5	17.4	2.9	0.2	0.1	0.02	10.0
Ecological Zones										
Mountain	363698	16.9	17.8	28.8	23.8	5.2	0.4	0.3	0.03	7.1
Hill	2532041	17.0	19.1	27.6	23.0	4.6	0.3	0.2	0.03	7.5
Tarai	2527558	25.5	24.8	25.1	10.7	1.0	0.08	0.1	0.01	12.7
Development Regions										
EDR	1230743	24.0	22.6	25.7	15.4	2.6	0.2	0.1	0.02	9.2
CDR	1962238	18.4	21.6	27.0	16.7	2.9	0.2	0.2	0.03	12.9
WDR	1065599	18.1	19.6	27.8	22.4	3.8	0.2	0.2	0.03	7.7
MWDR	695041	25.1	23.4	27.0	15.4	1.9	0.1	0.1	0.01	6.8
FWDR	469703	26.7	21.9	23.1	16.0	3.4	0.2	0.2	0.03	8.6

Source: Central Bureau of Statistics (2014) National Report-1

9.11. Conclusions

The increased Pakki type of house shows the gradual improved living conditions of the people of Nepal. The decreasing owned type of ownership and increased rented category of household mainly in urban areas indicates continued rural-urban migration. Available local materials primarily influence the construction materials used in roofs and outer walls of houses. Nearly two thirds of houses in Nepal are not older than twenty years, which shows an increased trend of building new houses. In rented owned houses, female headed households were more than 5% higher than the national level data on female heads of households, which reflects the scenario of foreign labour migration of males and their families residing in rented houses mainly in urban areas.

9.12 Policy recommendations

A construction code for the construction of residential and non-residential structures (mapdanda) has been developed for urban areas and for village development committees developing as urban centres. It has been delayed to develop standards of building construction in rural areas. If such policies are made and implemented effectively, it will ultimately help to improve the living conditions of people and create a positive environment for the development of new urban centres in the future.

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Annex 9.1 Percentage distribution of household by ownership of house occupied for development regions, 2011

Ownership of House	EDR			CDR			WDR			MWDR			FWDR		
	1991	**2001**	**2011**	**1991**	**2001**	**2011**	**1991**	**2001**	**2011**	**1991**	**2001**	**2011**	**1991**	**2001**	2011
Owned	91.7	88.9	89.06	91.5	84.3	77.8	93.2	89.1	85.4	95.1	92.9	93.0	94.8	94.5	94.7
Rented	4.9	7.6	8.2	6.4	13.3	20.3	4.3	8.1	12.7	2.1	4.4	5.8	2.1	2.9	3.9
Rent-free	2.0	3.0	-	1.0	2.1	-	1.8	2.4	-	1.9	3.3	-	2.3	2.3	-
Institutional	0.8	0.3	0.008	0.4	0.2	0006	0.3	0.2	0.006	0.3	0.2	0.003	0.3	0.2	0.004
Others	0.1	0.2	1.9	0.1	0.1	1.26	0.1	0.1	1.3	0.1	0.2	0.008	0.1	0.1	0.003
Not stated	0.5	-	-	0.6	-	-	0.4	-	-	0.5	-	-	0.5	-	-
Total %	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Total (N)	**821762**	**1000358**	**1230743**	**1115428**	**1465753**	**1962238**	**69016**	**863045**	**1065599**	**415846**	**479817**	**695014**	**285525**	**365401**	**469703**

Source: Central Bureau of Statistics (2003) Population Monograph of Nepal vol. I, Table 5.5
Central Bureau of Statistics (2014) National Report-1, Table 1

Annex 9.2 Percentage Distribution of Type of House Ownership by Caste/Ethnicity Group of Household Head

Area	Ownership Type: Owned															
	Household Head by Caste/Ethnicity Group															
Rural/Urban	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Total (N)
Urban	19.9	18.5	1.4	7.9	1.5	6.0	2.0	17.3	11.4	3.8	5.4	3.1	0.7	0.01	0.02	593,842
Rural	11.8	20.0	0.007	10.4	2.5	9.1	4.7	3.3	15.3	8.4	9.0	3.5	0.1	0.01	0.01	4,029,811
Total	12.9	19.8	0.008	10.0	2.4	8.7	4.4	5.1	14.8	7.9	8.6	3.4	0.2	0.01	0.01	4.623,653
															Ownership Type: Rented	
Urban	24.3	20.6	1.2	6.1	0.004	3.9	0.005	8.8	16.7	8.9	3.9	2.5	1.4	0.9	0.2	420,483
Rural	19.3	21.2	0.005	3.9	0.003	6.9	0.005	5.9	21.9	12.9	3.6	1.8	0.4	0.7	0.05	274,218
Total	22.5	21.0	0.009	5.3	0.004	5.1	0.005	8.0	18.8	10.5	3.7	2.3	1.0	0.8	0.01	6,94,701
Ownership Type: Institutional																
Urban	27.4	20.2	2.4	6.2	0.007	3.7	1.4	7.3	12.7	7.6	7.1	1.3	0.7	1.0	0.2	17,392
Rural	24.0	19.6	2.4	7.4	1.4	4.3	3.9	4.6	12.7	7.8	8.0	1.9	0.8	1.0	0.1	16,921
Total	25.7	19.9	2.4	6.8	1.0	4.0	2.6	6.0	12.7	7.6	7.5	2.2	0.8	1.0	0.2	34,313
Ownership Type: Others																
Urban	14.9	17.1	0.007	3.2	0.007	10.2	2.1	7.4	24.9	10.0	5.8	0.01	0.6	1.2	0.03	13,858
Rural	11.7	16.5	0.004	3.2	1.0	13.7	5.5	2.6	22.2	12.3	7.8	1.8	0.2	1.0	0.01	56,556
Total	12.3	16.6	0.005	3.2	0.01	13.0	4.8	3.5	22.7	11.9	7.4	1.7	0.2	1.0	0.02	70,630
Ecological Zones				**Ownership Type: Owned**												
Mountain	9.7	40.5	0.03	0.5	0.2	11.1	0.01	4.0	15.7	17.4	0.05	0.01	0.01	1.0	0.02	335,521
Hill	15.9	26.0	0.05	0.4	0.02	13.0	0.08	9.2	22.6	11.3	0.4	0.2	0.05	0.8	0.04	1,995,266
Tarai	10.7	11.4	1.5	19.9	4.8	4.7	8.8	1.7	7.9	3.5	17.0	6.8	0.3	1.1	0.01	2,292,866
Total	12.9	19.8	0.8	10.0	2.4	8.7	4.4	5.1	14.8	7.8	8.6	3.5	0.2	0.9	0.01	4,623,663
Ownership Type: Rented																
Mountain	13.2	27.4	0.2	2.0	0.09	7.0	0.1	6.3	27.0	14.3	1.0	0.3	0.08	0.8	0.05	20,363
Hill	22.8	21.6	0.4	3.0	0.1	4.9	0.2	9.1	19.7	12.8	2.0	1.6	0.7	0.8	0.1	489,928
Tarai	22.3	18.3	2.4	11.5	1.1	5.3	1.3	4.0	15.2	3.8	8.0	4.1	1.9	1.0	0.09	18,4410
Total	22.3	20.9	0.9	5.2	0.4	5.1	0.5	7.7	18.7	10.5	3.6	2.2	1.0	0.8	0.1	69,4701
Ownership Type : Institutional																
Mountain	29.8	31.8	0.7	3.5	0.09	3.6	0.3	4.9	14.0	7.4	2.7	0.3	0.2	0.7	0.04	2,334
Hill	28.8	23.3	0.9	3.8	0.2	3.4	0.2	7.8	14.8	11.0	3.6	0.9	0.4	0.7	0.2	16,291
Tarai	21.9	14.7	4.3	10.3	2.1	4.6	5.4	4.3	10.4	4.2	12.4	2.5	1.3	1.3	0.1	15,688
Total	25.7	19.9	2.4	6.8	1.1	4.0	2.6	6.0	12.7	7.7	7.5	1.6	0.8	1.0	0.2	34,313
Ownership Type: Others																
Mountain	8.0	20.9	0.07	1.0	0.02	12.4	0.05	2.8	35.5	17.1	0.6	0.07	0.02	1.4	0.0	5,480
Hill	14.3	20.1	0.1	1.0	0.08	15.9	0.1	5.0	29.1	11.5	1.1	0.4	0.1	0.9	0.02	30,556
Tarai	1.2	12.8	0.8	5.6	1.9	10.6	9.6	2.3	15.0	13.4	14.1	3.2	0.4	1.1	0.02	34,594
Total	12.3	16.6	0.5	3.2	1.0	13.0	4.8	3.5	22.7	11.9	7.4	1.8	0.2	1.0	0.02	70,630

Note: A= Hill Brahmin, B=Hill Chhetree, C= Madhesi Brahmin/Chhetree, D= Madehesi Other caste-A, E= Madhesi Other Caste B, F= Hill Dalit, G= Madhesi Dalit, H= Newar, I= Mountain/Hill Janajati –A, J= Mountain/Hill Janajati –B, K= Tarai Janajati, L= Muslim, M= Others, N= other not stated above, O= Foreigners

Source: Central Bureau of Statistics (2014) National Report-1, Table

Annex 9.3 Percentage distribution of household by type of house for ecological zones, 2011

Type of House	Mountain			Hill			Tarai		
	1991	**2001**	**2011**	**1991**	**2001**	**2011**	**1991**	**2001**	**2011**
Pakki	32.4	44.8	59.0	34.7	51.1	74.0	10.4	20.8	42.6
Ardha-pakki	47.3	41.6	36.4	33.1	30.8	21.8	12.2	25.7	39.5
Kachchi	19.2	13.0	3.7	31.0	17.6	3.1	75.2	52.4	16.7
Others	1.1	0.6	0.2	1.2	0.5	0.0	2.2	1.0	0.1
Not Reported	-	-	0.7	-	-	1.1	-	-	1.0
Total %	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Total (N)	**274,135**	**285,213**	**363,698**	**1,558,493**	**1,951,191**	**2,532,041**	**149,6093**	**1,937,970**	**2,527,558**

Source: Central Bureau of Statistics (2003) Population Monograph of Nepal vol. I, Table 5.2
Central Bureau of Statistics (2014) National Report-1, Table

Annex 9.4 Percentage distribution of household by type of house for development regions

Type of House	EDR			CDR			WDR			MWDR			FWDR		
	1991	2001	2011	1991	2001	2011	1991	2001	2011	1991	2001	2011	1991	2001	2011
Pakki	6.3	14.3	32.8	26.9	41.8	66.2	31.7	52.3	78.8	17.0	27.0	48.0	49.3	52.5	61.5
Ardha-pakki	25.1	33.0	47.2	17.9	26.9	25.3	26.8	26.0	16.3	40.8	38.4	41.1	23.0	23.7	31.5
Kachchi	65.4	51.7	19.2	53.6	30.6	6.9	39.4	21.1	4.2	41.0	34.0	10.1	26.9	23.2	6.0
Others	3.2	1.0	0.1	1.6	0.7	0.0	2.1	0.6	0.1	1.2	0.6	0.1	0.8	0.6	0.1
Not Re-ported	-	-	0.7	-	-	1.5	-	-	0.7	-	-	0.7	-	-	0.8
Total %	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total (N)	821762	1000358	1,230,743	1115428	1,465,753	1,962,238	69,,016	863,045	1,065,599	415,846	479,817	695,014	285,525	365,401	469,703

Source: Central Bureau of Statistics (2003) Population Monograph of Nepal vol. I, Table 5.3
Central Bureau of Statistics (2014) National Report-1, Table

Glossary

Absentee Population	An individual absent from the household and gone abroad for more than six months before the census date.
Age Dependency Ratio	The ratio of persons in the ages defined as dependent (under 15 and over 60 years) to persons in the ages defined as economically productive (15–59 years).
Ageing Index	The number of persons 60 years and above per hundred persons under age 15 years.
Age Specific Fertility Rate	Number of births to women of a particular age group, in a specific calendar year, to themid-year population of women in that same age group.
Average household size	Average number of usually residing population of a household. Total population of a specific area divided by the total number of household of that area provides average household size.
Child Mortality Rate	Total number of deaths of children aged one to four years during a specific year divided by the mid-year population of children aged one to four years.
Crude Birth Rate (CBR)	The total number of live births per 1,000 population in a given year.
Crude Death Rate (CDR)	The total number of deaths per 1,000 population in a given year.
Children Ever Born (CEB)	Total number of children born alive throughout the child bearing age (15-49 years) of a female.
De' factoPopulation	Consists of all persons who are physically present in the country or area at the reference date of census/survey, whether or not they are usual residents.
De' jure Population	Consists of all usual residents, whether or not they are present at the time of the enumeration.
Economically active population	Economically active population comprises all persons ofage tenyears and above of either sex who furnish the supply of labor for the production of economic goods and services as defined by the United Nations System of National Accounts during a specified time-reference period.
Emigrants	Persons who move out of a country for the purpose of establishing a new usual residence.

Household	Refers to a group of people who normally live together and sharea common kitchen.
Head of the household	The person whether male or female reported by the household as being mainly responsible for the maintenance and management of the household. The person should be usual resident of the household and should be aged 10 years and above
Immigrants	Persons who enter into a country for the purpose of establishing a new usual residence.
Infant Mortality Rate (IMR)	Total number of deaths of children under one year of age per 1,000 live births in a specific period (normally one year).
In-migrants	Persons who move into a different area withina country for the purpose of establishing a new usual residence.
Internal migration	The movement of people within a country for the purpose of establishing a new usual residence.
International migration	The movement of people between and among countries for the purpose of establishing a new usual residence
Labour force	Population of age 10 years and above who are economically active. In labour force, persons employed and unemployed are included; and persons those are not seeking employment, housewives and students are excluded.
Labour force participation rate	The number of persons in the labour force (economically active) divided by the corresponding total number of persons (usually those 10years and above).
Literacy	The ability to read and write in any language with understanding and ability to do simple arithmetic. Literacy pertains to persons at ages fiveyears and above. In Nepal population aged five years and above who can read and write is considered as literate.
Institutional Population	Population reported to be residing in institutional residence/housing units such as barracks, hostels, cantonments, prisons etc. at the time of census.
Life Expectancy(e_x)	Represents the average number of years remaining to a person who survives to the beginning of a given age or age interval x.

Life Expectancy at Birth(e_o)	Number of years a newborn child can be expected to live under a given mortality condition of an area in a given year.
Life Table	A tabular display of life expectancy and the probability of dying at each age (or age group) for a given population, according to the age-specific death rates prevailing at that time. The life table gives an organized, complete picture of a population's mortality.
Marital Status	Refers to the personal status of each individual in reference tothe marriage laws or socio-religious customs of the country. All personsexcept the single are ever-married persons. Information on marital status are gathered from all persons at ages 10 years and above.
Median Age	The age that divides a population into two numerically equal groups; that is, half the people are younger than this age, and half are older.
Maternal Mortality Ratio (MMR)	The number of women who die as a result of pregnancy and childbirth related complications per 100,000 live births in a given year.
Maternal Mortality Rate (MMR)	The number of women who die as a result of pregnancy and childbirth related complications per 100,000 female population of reproductive age in a given year.
Migration	Movement of people across a specified boundary for the purpose of establishing a new usual residence.
Natural increase	Population increase that is the result of births and deaths; growth occurs when the number of births in a given time period (e.g. a calendar year) exceeds the number of deaths; negative growth, or population decline, occurs when the number of deaths exceeds the number of births.
Net Migration Rate	Difference between in-migration and out-migration of a particular place, divided by the mid-year population of that place expressed in per 1,000 population. For international migration, difference between immigration and emigration is taken as numerator.
Out-migrants	Persons who move out of an area within a country for the purpose of establishing a new usual residence in a different area of the same country.

Population Census	The total process of collecting, compiling, evaluating, analyzing and publishing demographic, economic and social data pertaining to all persons in the country or in a well-limited territory.
Population Change	The difference between the size of the population at the end and the beginning of a period.
Population Density	Number of persons usually residing per square kilometer of land area in a specific spatial area.
Population Distribution	The patterns of settlement and dispersal of a population.
Population Growth Rate	The average annual rate of change of population size during a specified period usually expressed as a percentage.
Population Projection	Computation of future changes in population numbers, given certain assumptions about future trends in the rates of fertility, mortality and migration based on given base population size, structure and distribution.
Population Pyramid	Diagram, usually a bar chart depicting the distribution of a given population by age and sex. By convention, the younger ages are at the bottom, with males on the left and females on the right.
Sex Ratio	The number of males per 100 females in a population.
Singulate Mean Age at Marriage (SMAM)	The probability of being single (not married) cohort of the population below 50 years of age who have attained age of 15 years and above. It represents the mean age of persons' first entry into marital union (departure from single status).
Total Dependency Ratio	The number of persons under age 15 plus persons aged 60 or older per one hundred persons of age 15 to 59 years. It is the sum of the childdependency ratio and the old-age dependency ratio.
Total Fertility Rate	The average number of children that would be born alive to a woman during her lifetime if she were to pass through her childbearing years conforming to the age specific fertility rates of a given time period.
Usual place of residence	It refers to the place of residence of members of household where they were usually residing or their intention is to reside usually at that place in future days for at least six months and over.
Youth dependency Rate	The number of persons 0 to 14 years per one hundred persons 15 to 59 years.

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