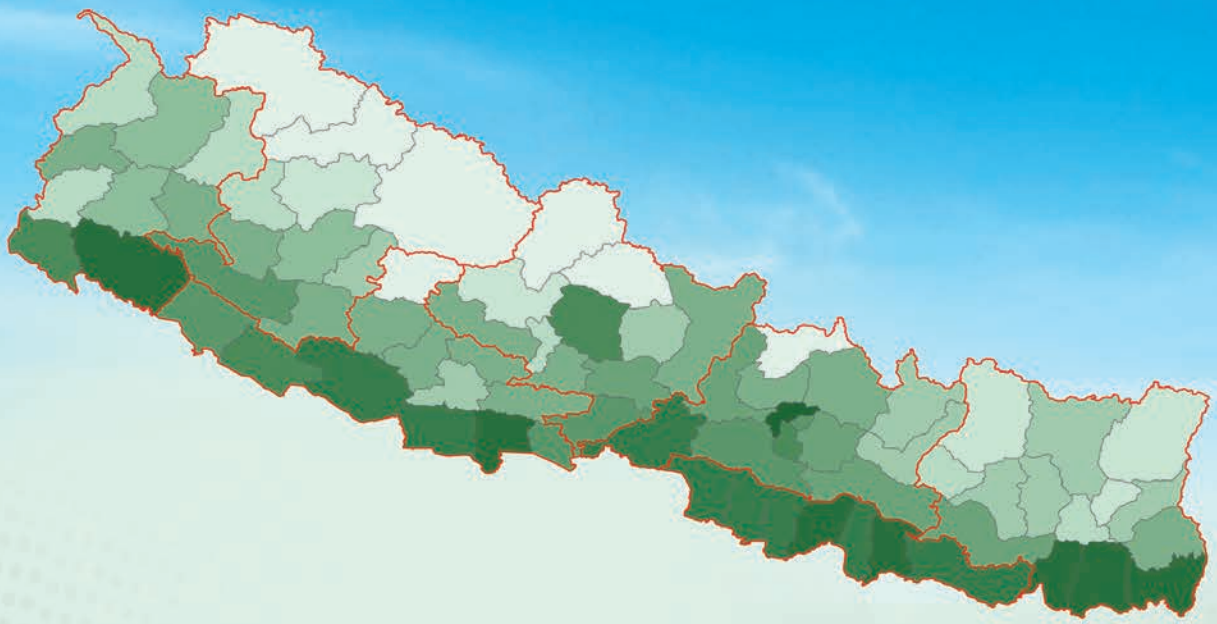
Thematic Report-VII

National Population and Housing Census 2021

Demographic Dividend in Nepal



Government of Nepal
Office of the Prime Minister and Council of Ministers
National Statistics Office
Thapathali, Kathmandu

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Cover Map: Population distribution by district, NPHC 2021

Chief Secretary

Kathmandu, Nepal

Foreword

Government of Nepal has placed great emphasis on evidence-based policymaking, which depends on the availability of reliable and high-quality official data. The National Statistics Office (NSO) has consistently served this need by providing crucial data to inform government initiatives. As a key agency under the Office of the Prime Minister and Council of Ministers, the NSO plays a critical role in producing socio-economic and environmental statistics. These statistics are vital not only for federal, provincial, and local governments but also for a wide range of stakeholders across various sectors. Access to accurate and timely statistics is essential for implementing policies and plans at all levels of governance.

Nepal is undergoing a significant demographic shift, presenting both opportunities and challenges for its socioeconomic development. With a growing working-age population and a declining dependency ratio, the country is entering a demographic window of opportunity. Nepal is in a great position to reap the economic benefits of demographic dividend that arise from changes in population structure, leading to increased labour force participation and economic growth.

This report, *Demographic Dividend in Nepal*, analyzes the country's demographic trends using data from the 2021 Census as well as from earlier censuses, and other sources. It explores indicators such as population composition, fertility and mortality rates, migration, and economic growth. The study also examines Nepal's demographic dividend phase, which began around 1991 and is expected to last until 2051.

The findings highlight that strategic interventions are needed to fully harness this demographic shift. While trends like a declining dependency burden and rising GDP per capita are positive, challenges such as unemployment and skill gaps must be addressed for Nepal to maximise its demographic advantage.

On behalf of the Government of Nepal, I extend my sincere appreciation to everyone who contributed to the preparation of this long-awaited report. Their dedication and expertise have made this valuable resource possible, helping to strengthen Nepal's policy framework for sustainable development. I also appreciate the tireless efforts of the NSO team in producing this essential and highly technical report, which provides a strong basis for informed decision-making.

I am confident that this report will serve as a valuable resource for policymakers, researchers, and development practitioners in shaping strategies that promote sustainable and equitable development in Nepal.

March 2025

Eaknarayan Aryal
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Foreword

The National Population and Housing Census (NPHC) is the only source that consistently provides demographic and housing data down to the lowest administrative unit, i.e., the Ward. To meet the needs of a broad range of users, we have included brief explanations of the data in our reports. Over the years, the National Statistics Office (NSO) has focused not just on statistical reports but also on valuable analytical ones that cater to a wide audience, both within and outside the country. The production and dissemination of quality statistics are not merely public goods but national resources in the data and information age.

I am pleased to present the report *Demographic Dividend in Nepal*. Nepal's evolving demographic landscape presents both challenges and significant opportunities for growth. With a rapidly increasing working-age population and a declining dependency ratio, Nepal is poised to leverage the demographic dividend. This phase, marked by a growing productive labour force, can fuel long-term economic prosperity, provided the country makes the right strategic choices.

The report offers a detailed analysis of Nepal's demographic trends and their implications for socio-economic development. Using the latest data, including the NPHC 2021, it examines key factors such as fertility rates, migration patterns, and the evolving labour force. The report also explores the critical time window for maximising the benefits of this demographic transition, with the potential to boost economic growth and improve living standards.

As Nepal progresses through this demographic transition, proactive and inclusive policies are vital. Addressing challenges like unemployment, underemployment, and regional disparities is key to ensuring the demographic dividend benefits all segments of society. With sound policies, Nepal can harness this opportunity to set the stage for a prosperous future.

This report is a valuable resource for policymakers, researchers, and stakeholders. I appreciate the dedication of all contributors in bringing this analysis to fruition, and I am confident that the insights here will guide Nepal's strategic planning toward sustainable development.

Specifically, I commend the Population Section staff for their tireless efforts in generating data, providing support, and reviewing the report. The Head of the Social Statistics Division at NSO coordinated all activities, and I value his contributions.

Special thanks to experts of demographic dividend Dr. Dhanendra Veer Shakya and Mr. Damodar Gnawali for analyzing crucial data and presenting important findings, and to Mr. Uttam Narayan Malla, former Director General of the Central Bureau of Statistics, for reviewing it from a government perspective. I also appreciate the technical support from the United Nations Population Fund (UNFPA). Additionally, I extend my gratitude to the British Embassy Kathmandu and the Swiss Agency for Development and Cooperation (SDC) for their financial support at various stages of this report's development.

Lastly, I encourage constructive feedback from our users to improve future editions of this report.

March 2025

Maddhu Sudan Burlakoti
Chief Statistician

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ACRONYMS AND ABBREVIATIONS

A.D.	Anno Domini (English calendar or years after the birth of Jesus Christ)
B.S.	Brikram Sambat (Nepali calendar year)
CBR	Crude birth rate
CBS	Central Bureau of Statistics
CDR	Crude death rate
CDPS	Central Department of Population Studies, Tribhuvan University
CMR	Child marriage ratio
CPR	Contraceptive prevalence rate
DD	Demographic dividend
DDI	Demographic dividend index
DDEI	Demographic dividend effort index
diff.	Difference
DHS	Demographic Health Survey
DPR	Dependency ratio
etc.	Etcetera
FDI	Foreign direct investment
GDP	Gross domestic product
GIS	Geographic information systems
GPI	Gender parity index
GR	Growth rate
ICT	Information, communications and technology
IMF	International Monetary Fund
IMR	Infant mortality rate

IPUMS	Integrated public use micro-data series
KMO	Kaiser-Meyer-Oklin (measure)
LCU	Local currency
LFPR	Labour force participation rate
MCH	Maternal and child health
MMR	Maternal mortality ratio
MoEST	Ministry of Education, Science and Technology
MoF	Ministry of Finance
MoH	Ministry of Health
MoHP	Ministry of Health and Population
MoLE	Ministry of Labour and Employment
MoYS	Ministry of Youth and Sports
NAR	Net attendance ratio
n.d.	No date
NEET	Not in education, employment and training
NDHS	Nepal Demographic Health Survey
NPHC	National Population and Housing Census
NLC	Nepal Law Commission
NPC	National Planning Commission
NSO	National Statistics Office
OLS	Ordinary least square
PCA	Principal component analysis
PPP	Purchasing power parity
Q-Q	Quintile-quintile

SDG	Sustainable Development Goals
STEM	Science, technology, engineering and mathematics
TFR	Total fertility rate
TVET	Technical and vocational education and training
UN	United Nations
UNFPA	United Nations Population Fund
UNICEF	United Nations Children Fund
VIF	Variance inflation factors

GLOSSARY

Absentee	Population usually staying abroad at the time of enumeration who intend to return to their country in the future.
Child dependency ratio	The ratio of populations below 15 to the population aged 15-64 years, expressed per 100 of the denominator.
Child dependent	The child population below 15 years of age.
Child marriage ratio (CMR)	CMR is the percentage of women aged 18-24 years who married prior to turning 18, as used for the calculation purpose of demographic dividend index (DDI) in this report. However, this ratio may deviate from other definition calculations
Crude birth rate (CBR)	Number of births in a year, per 1,000 mid-year population (average population of the year).
Crude death rate (CDR)	Number of deaths in a year, per 1,000 mid-year population (average population of the year).
Demographic dividend	The economic growth potential that can result from shifts in a population's age structure, mainly when the share of the working-age population (15-64) is larger than the non-working age population (14 years of age and younger and 65 years of age and older).
Demographic dividend index (DDI)	An index constructed using the child marriage ratio; net-attendance ratio; and population not in education, employment and training according to various gender and age groups of population – especially, adolescents and youth – to evaluate economic growth potential arising from favourable demographic shifts.
Demographic dividend effort index (DDEI)	An index designed from information such as maternal and child health; education; family planning; women's empowerment; labour market conditions; and governance and economic institutions to assess progress in creating the conditions necessary to leverage the demographic dividend effectively.
Dependency ratio	The ratio of populations below 15 plus 65 years and above to the population aged 15-64 years, expressed per 100 of the denominator.

Dependents	Cohorts of population aged 0-14 plus 65 years and above.
Gross domestic product (GDP)	Value of goods and services produced in an economy within a defined accounting period after deducting the intermediate consumption (the cost of goods and services) involved in the process of production.
Gross domestic savings at constant price:	Gross domestic savings at constant price, which is also known as real gross domestic savings, measures the saving rate by adjusting for prices, reflecting the true volume of savings.
Household with absentee:	A household having at least one member staying abroad at the time of enumeration who intend to return to the country in the future.
Infant mortality rate (IMR):	Number of infant deaths (under one year of age) in a year per 1,000 live births in the same year.
Internal migration (district level):	Population moving from one district to another within the country.
Labour force:	Population aged 10 years and above who are economically active, including usually active with employment or unemployed and not usually active.
Literacy rate	Percentage of population 5 years and above who can both read and write with understanding.
Net attendance ratio (NAR)	NAR is the percentage of students between the age of 11 and 15 years who attended secondary level of education, as used for the calculation purpose of DDI in this report. In this context, the secondary level of school is considered as grades 6-10 as practiced before its recent re-classification.
Not in education, employment and training (NEET):	This report defines NEET for the calculation purpose of DDI as the number of 15-24 year who were no longer in the education system and not working (or had worked for less than six months in the year) while looking for work, and who had a reason other than education for not working, per hundred 15-24 year olds. As the information regarding training was not captured in the 2021 Census of Nepal, this component is not included in this report.

Old-age dependency ratio:	The ratio of populations aged 65 and above to population aged 15-64 years, expressed per 100 of the denominator.
Old-age population	A population aged 65 years and above.
Population pyramid	A diagram presenting age-sex structure of a population.
Pre-working-age population	Population aged 0-14 (or under 15).
Post-working-age population	Population aged 65 and above.
Total fertility rate (TFR):	Total number of births a woman is likely giving to birth in her reproductive period (15-49 years), if she experiences the given age-specific birth rates in her reproductive ages.
Wealth index	An index computed to assess the socio-economic status of households.
Working-age population	The population aged 15-64 years.
Youth	The population aged 15-24 years of age.

कार्यकारी सारांश

१. 'जनसाङ्ख्यिक लाभांश' भन्नाले जनसङ्ख्याको उमेर–संरचनामा आउने परिवर्तनका कारण प्राप्त हुने आर्थिक–वृद्धिको सम्भावनालाई जनाउँछ । कुनै मुलुक जहाँ जन्मदरमा कमी आएको छ र काम गर्ने उमेरको जनसङ्ख्यामा वृद्धि भएको छ भने त्यहाँ जनसाङ्ख्यिक लाभांशयोग्य स्थितिको सम्भावना हुन्छ र त्यसबाट प्राप्त हुने परिणाम भनेको समग्र आर्थिक–वृद्धि र जनताको जीवनस्तरमा हुने गुणात्मक सुधार हो । यसले एक किसिमको समयआबद्ध जनसाङ्ख्यिक लाभांश उपलब्ध गराउँछ । यस प्रतिवेदनमा राष्ट्रिय जनगणना २०७८ तथा विगतका जनगणनाहरू, सर्वेक्षण प्रतिवेदनहरू, राष्ट्रिय तथ्याङ्क प्रणालीबाट प्राप्त अन्य आधिकारिक तथ्याङ्कहरू तथा विश्व बैंकबाट प्रकाशित तथ्याङ्कहरू समेत उपयोग गरी जनसाङ्ख्यिक लाभांशबारे गहन विश्लेषणका साथै सम्बन्धित सूचकहरू तयार गरिएका छन् ।

२. जनसङ्ख्याको उमेर संरचनामा आएको परिवर्तनलाई जनसङ्ख्या वृद्धिदर, उमेर संरचना, आश्रित जनसङ्ख्याको अनुपात, काम गर्ने उमेरको जनसङ्ख्या आदिको आधारमा मापन गरिएको छ । जनसाङ्ख्यिक संरचनाको परिवर्तन वास्तवमा जन्मदर, मृत्युदर, आन्तरिक बसाइँसराइ, अनुपस्थित जनसङ्ख्या, श्रमशक्ति सहभागिता, सम्पत्ति सूचकाङ्क, कुल गार्हस्थ्य उत्पादन र कुल बचतदर आदिसँग अन्तरसम्बन्धित हुन्छ । जनसाङ्ख्यिक लाभांश विभिन्न तथ्याङ्कका आधारमा भिन्नभिन्न तरिकाले मापन गर्न सकिन्छ । सामान्यतया निम्न पाँच विधिहरू मापन कार्यका लागि प्रचलनमा रहेका छन् ।

- आर्थिक दृष्टिकोणले सक्षम वा काम गर्ने उमेर (१५-६४) समूहको जनसङ्ख्या आश्रित जनसङ्ख्या (१५ वर्ष मुनिका बच्चाहरू र ६५ वर्ष र सोभन्दा माथिका) भन्दा अधिक रहे नरहेको गणना गरी,
- जब १५ वषमुनिका बच्चाको जनसङ्ख्या ३० प्रतिशतभन्दा कम र ६५ वर्ष र सोभन्दा माथिका ज्येष्ठ पिँढीको जनसङ्ख्या १५ प्रतिशतभन्दा कम रहेको अवस्थाको विश्लेषण गरी,
- काम गर्ने उमेर वा आर्थिक दृष्टिकोणले सक्रिय जनसङ्ख्याको वृद्धिदर कुल जनसङ्ख्याको वृद्धिदरसँग तुलना गरी,
- काम गर्ने उमेरको जनसङ्ख्या (१५ वर्षमुनिका बालबालिकामा पर्ने जनसङ्ख्या) भन्दा छिटो वृद्धि भए नभएको विश्लेषण गरी र
- आश्रित जनसङ्ख्या र काम गर्ने उमेरको जनसङ्ख्याको समूहको अनुपात ६० अर्थात् १०० जना आर्थिक रूपले सक्रिय जनसङ्ख्याको तुलनामा आश्रित जनसङ्ख्या ६० पुगेको अवस्थाको विश्लेषण गरी,

३. नेपालका जनगणनाहरूबाट प्राप्त तथ्याङ्कलाई विश्लेषण गर्दा वि.स. २००९/११ देखि २०७८ सम्म नै काम गर्ने उमेरको जनसङ्ख्या आश्रित जनसङ्ख्याभन्दा अधिक अनुपातमा रहेको देखिएको छ जुन वि.सं. २०७८ मा ६५.२ छ । त्यस्तै, १५ वर्ष मुनिका र ६५ वर्षमाथिको जनसङ्ख्याको अंश क्रमशः २७.८ र

६.९ रहेको छ । यसअनुसार नेपाल जनसाङ्ख्यिक लाभांशको चरणमामा वि.सं. २०७६ मा प्रवेश गर्ने र वि.सं. २१०८ मा बाहिरिने देखिन्छ । अर्को परिदृष्य अर्थात् कुल जनसङ्ख्याको वृद्धिदर (०.९२ प्रतिशत) को तुलनामा काम गर्ने उमेरको जनसङ्ख्याको वृद्धिदर (१.७५ प्रतिशत) बढी रहेको अवस्थाअनुसार मुलुक जनसाङ्ख्यिक लाभांशको चरणमा २०४८-२०५८ मा प्रवेश गरिसकेको र वि.सं. २०९१ मा बाहिरिने अपेक्षा छ । त्यस्तै, आर्थिक रूपले सक्षम जनसङ्ख्याको ऋणात्मक वृद्धिदर (-१.२५) को विश्लेषणको आधारमा मुलुक वि.सं. २०४८-२०५८ को मध्यतिर जनसाङ्ख्यिक लाभांशको चरणमा प्रवेश गरिसकेको र सो स्थिति वि.सं. २१०८ सम्म रहने अपेक्षा गरिन्छ । आश्रित जनसङ्ख्याको अनुपात जुन वि.सं. २०७८ मा ५३.३ थियो, त्यसको आधारमा नेपाल वि.सं. २०७४ तिरै प्रवेश गरेको र वि.सं. २१०८ भन्दा केही परसम्म सो स्थिति रहनेछ जतिखेर सो अनुपात ६० को नजिक रहनेछ । उपरोक्त विश्लेषणको आधारमा अहिले नेपाल जनसाङ्ख्यिक लाभांश प्राप्त अवधिको करिब करिब मध्यावधिमा रहेको अनुमान गर्न सकिन्छ । यस समयमा आर्थिक रूपले सक्रिय हुनसक्ने ठुलो जनसङ्ख्याको समूह उपलब्ध छ । सङ्क्षेपमा यस्तो स्थितिको आँकलन गर्दा नेपाल वि.सं. २०४८ देखि २०५८ को बिचमा लाभांशको स्थितिमा प्रवेश गरेको र सो स्थिति २१०८ को वरिपरि अथवा ५०–५५ वर्षको समयावधिसम्म रहनेछ ।

४. जनगणनाबाट प्राप्त जनसङ्ख्या, उमेरगत विवरण, वैवाहिक स्थिति, जन्म, मृत्यु, बसाइँसराइ (आन्तरिक तथा बाह्य), अनुपस्थित जनसङ्ख्या, शैक्षिक तथ्याङ्क आदि विश्लेषण गर्दा जनसाङ्ख्यिक लाभांश र ती चर (variable) हरू बिच अन्तरसम्बन्ध स्थापित हुन्छ । यद्यपि, श्रमशक्ति सहभागिता र जनसाङ्ख्यिक लाभांश बिचको सम्बन्ध व्याख्या गर्न कठिन देखिएको छ । आर्थिक तथ्याङ्कको थप अध्ययन गर्दा काम गर्ने उमेर समूहका जनसङ्ख्यामाथिको भार (आश्रित जनसङ्ख्या) कम हुँदै जाँदा आर्थिक वृद्धिलाई टेवा पुग्ने देखिएको छ । मुलुकको प्रतिव्यक्ति कुल गार्हस्थ्य उत्पादनको वृद्धि र आश्रित अनुपातको विपरीत सम्बन्ध वि.सं. २०४८ देखि नै देखिन थालेको हो । त्यस्तै, मुलुकको समग्र बचतदर (Gross saving) मा भएको वृद्धिले आर्थिक सशक्ततामा सुधार देखिएको छ ।

५. विश्लेषणको क्रममा जनसाङ्ख्यिक लाभांश सूचकहरू (Demographic dividend index-DDI) पनि तयार गरिएका छन् । उक्त सूचक बालविवाहको अनुपात, विद्यालयमा खुद उपस्थितिदर, रोजगारी, तालिम, युवा, लिङ्ग र उमेर समूहको आधारमा तयार गरिएको एक संयुक्त सूचकाङ्क हो जुन शून्य (०) देखि सय (१००) सम्मको दायरामा रहन्छ । नेपालको उक्त सूचक २०७८ मा ७०.० देखिएको छ । उक्त सूचकअनुसार ठुलो मानले जनसाङ्ख्यिक लाभांशको बढ्दो सम्भावना र सानो मानले न्यून सम्भावनालाई इंगित गर्दछ । नेपालको सूचक ७०.० को अङ्कले जनसाङ्ख्यिक लाभांशको स्थितिले मध्यावधि चरण पार गरिसकेको जनाउँछ । त्यस्तै, अर्को सूचक जनसाङ्ख्यिक लाभांश प्रयास सूचक (Demographic dividend effort index-DDEI) पनि तयार गरिएको छ । जुन शून्य (०) देखि दश (१०) सम्मको दायरामा रहन सक्छ । यस सूचकले जनसाङ्ख्यिक लाभांशको उपयोगको अवस्थालाई जनाउँछ । यो पनि एक किसिम

संयुक्त सूचक हो, जसमा मातृशिशुको स्वास्थ्य अवस्था, शिक्षा, परिवार नियोजन, महिला सशक्तीकरण, श्रमबजारको अवस्था, सुशासन र आर्थिक प्रतिष्ठानहरूको प्रभावकारी उपयोग बारेका मानहरू प्रयोग गरिएको हुन्छ । नेपालले यस सूचकमा ६.० अङ्क प्राप्त गरेको अवस्था छ अर्थात् २०७८ मा जनसाङ्ख्यिक लाभांशको उपयोगको सम्भावनाको करिब ६० प्रतिशत मात्र उपयोग गर्न सकेको देखिन्छ ।

६. वास्तवमा मुलुकले अहिले अभूतपूर्व रूपमा युवा जनशक्ति प्राप्त गरेको अवस्था र आश्रित जनसङ्ख्याको भार न्यून रहेको अवस्था छ । यो उर्वर मानवीय शक्तिलाई प्रयोग गर्न सकेको खण्डमा प्रतिव्यक्ति गार्हस्थ्य उत्पादन (GDP per capita) मा तीव्र वृद्धि गर्न सकिने सम्भावना छ ।

निसन्देह, मुलुकसामु गरिबी, बेरोजगारी, राष्ट्रिय आयको विषम वितरण, व्यापारघाटा आदि चुनौती विद्यमान छन् । यसले वस्तुतः रूपान्तरणकारी नीतिहरू जसले लगानीमैत्री उत्साहप्रद स्थिति, मानव–पुँजीको गुणस्तर वृद्धिको वातावरण र समावेशी आर्थिक प्रवर्धन आदिको पक्षमा तत्काल कार्यान्वयनयोग्य नीति तथा कार्यक्रमहरूको आवश्यकता उजागर गरेको छ ।

७. अन्त्यमा, नेपालको जनसाङ्ख्यिक संरचनामा अभूतपूर्व परिवर्तन आएको छ र यसले राज्यले अघि सारेका दूरदृष्टि र आत्मसात गरेका सङ्कल्पलाई साकार पार्ने दिशामा असीम अवसरका ढोका खुला गरेको छ । आर्थिक उत्पादकत्व वृद्धि, मानव पुँजी विकासमा अग्रगामी कदम, राष्ट्रिय आयमा दिगो वृद्धि र राष्ट्रिय बचतमा वृद्धिउन्मुख प्रवृत्तिसहित नागरिकहरूको समग्र जीवनस्तर सुधार गर्ने रूपान्तरणकारी हस्तक्षेप गर्ने अवसर पनि प्राप्त भएको छ । यसको लागि बेरोजगारी, अर्धबेरोजगारी, शैक्षिक असमानता, सीपको विसंगति, पूर्वाधार र संसाधनका दृष्टिले विद्यमान प्रदेशगत विषमता, अव्यवस्थित सहरीकरण, पूर्वाधारको अपर्याप्तता, वातावरणीय चुनौती तथा वित्तीय र प्रविधिजन्य स्रोतको अपर्याप्तता आदि अझै पनि विशेष चुनौतीका रूपमा कायमै छन् । यी समस्यासँग जुध्दै जनसाङ्ख्यिक लाभांशको प्रतिफल अनुभूत गर्न राज्यको समग्र नीतिगत प्रतिबद्धता तथा प्रभावकारी कार्यान्वयन महत्वपूर्ण रहन्छ ।

EXECUTIVE SUMMARY

The demographic dividend (or demographic window of opportunity) is the economic growth potential that can result from shifts in a population's age structure. A country with both increasing numbers of workers and declining fertility has the potential to gain a demographic dividend which can lead to substantial improvements in both economic performance and the overall quality of life for the population. It presents a time-bound opportunity of demographic advantage.

This report used the data obtained from the National Population and Housing Census (NPHC) 2021, supplemented by earlier census data and reports, official statistics from the National Statistical System (NSS) and data from the World Bank to provide broader contextual insights. Descriptive statistics, some indices related to demographic dividend and regression analysis were used extensively to summarize and present trends in demographic shifts in Nepal.

Demographic shifts are measured in terms of population growth rates among its compositions; age structures of population; and dependency ratios of children and the old-age population to the working-age population. Demographic shifts are associated with fertility rates, mortality rates, internal migration (at district level) and international migration (population absentees), households with absentee populations, literacy, labour force participation, wealth index, gross domestic product (GDP) and gross savings.

This report adopted five different approaches in measuring the demographic dividend based on the i) share of the working-age (15-64) population and non-working age population (under 15 and 65 and above); ii) proportion of children under 15 years and old-age population (65 year and above) iii) growth rates of the working-age population and the total population; iv) growth rates of working-age population and the child dependents (0-14); and v) the threshold of dependency ratio. The demographic dividends are analysed using these criteria in this report.

The proportion of working-age (15-64) population criterion shows that Nepal consistently had a larger share of working-age population since 1952/54, to which it was 65.2 percent in 2021 with no explicit cut off year determined. Likewise, proportions of young population (0-14) and old-age population (65 and above) criterion showed its proportions respectively as 27.8 percent and 6.9 percent in 2021, along with the country entering the demographic dividend stage in 2019 and expected to terminate in 2051. The average annual population growth rate of Nepal was 0.92 percent during 2011-2021 and the growth rate of working-age population was 1.75 percent. According to population growth rates criterion, the country entered into a demographic dividend phase during 1991-2001 and is expected to exit by 2034. Similarly, the average annual growth rate of child dependents (0-14) was -1.25 percent between 2011 and 2021 and, according to growth rates of working-age population and child dependents, the country entered into demographic dividend stage during 1991-2001 and will

continue to remain in this stage beyond 2051 as the working-age population grows faster than the rate of child dependents. The dependency ratio (total) of Nepal was 53.3 in 2021 and, according to dependency ratio criterion, the country entered into demographic dividend stage in 2017 and will continue to remain in this stage beyond 2051 as the dependency ratio will continue be less than 60.

Nepal is currently in the midst of demographic window of opportunity, with a significant portion of its workforce available for economic activities. Based on both literatures using different modules of demographic dividend from various sources and population projections using 2021 Census data, it can be concluded that the demographic dividend in Nepal started in-between 1991 and 2001 and may end around 2051, spanning its duration to around 50-55 years.

The data show that there are some associations between stage of demographic window of opportunity and higher mean and median age of population; higher mean age at first marriage; reduced fertility and mortality rates; households in destination with more district level internal migrants; lower absentees and households having lower proportion absentee population; higher literacy; and higher proportion in higher levels of educational attainments, based on different criteria of definitions related to demographic dividends. However, the association between labour force participation and demographic dividend has not been well established.

The available data also indicate a declining burden on the economically active population, potentially catalyzing further economic growth. The GDP per capita after 1991/92 showed its rising trend associated with a decreasing dependency ratio and indicating an onset of the demographic dividend stage. Likewise, both gross domestic saving and gross national saving increased significantly over time (though retarded in recent years), reflecting Nepal's improving economic strength with gradual decline in dependency ratio before 2001/02 and then after the pace of decline increasing with more gross savings.

The demographic dividend index (DDI) of Nepal, a composite index constructed based on the child marriage ratio; net-attendance ratio; and population not in education, employment and training (according to various age groups of population and gender, especially adolescents and youth) stands at 70.0 in 2021 indicating an increment during 2011-2021. As the index ranges from 1-100, higher DDI index implies more demographic windows of opportunity compared to its lower index value. Based on this index value, Nepal (70.0 DDI) is currently moving towards the midst of the upper half of its demographic dividend stage before its exit. Likewise, demographic dividend effort index (DDEI) is a composite measure designed to assess a country's progress and potential in harnessing with demographic dividend using information such as maternal and child health; education; family planning; women's empowerment; labour market conditions; and governance and economic institutions. This index, with its range from 0-10, is also increasing over time. The index of 6.0 in 2021

may suggest its heading towards the midst of the upper half of its demographic dividend stage before its exit, as in the case of DDI.

The country is currently experiencing a youth bubble, with a large working-age population relative to dependents and a relatively low dependency ratio. This favourable age structure presents an opportunity to drive economic development and, if effectively utilized, can increase GDP per capita. Yet poverty, unemployment, and inequality pose substantial challenges. Transformative policies that encourage investment, enhance human capital, and promote inclusive growth will be essential to ensuring the country fully harnessing with the demographic dividend.

Nepal's demographic landscape is undergoing substantial changes with a unique chance to benefit economically from the demographic dividend. However, capturing this opportunity also involves overcoming several challenges. Opportunities can be achieved in the forms of boosted economic productivity; human capital development; increased national savings and investment; social stability; and middle-class expansion. Despite the opportunities from demographic transition, several challenges must be addressed related to unemployment and underemployment; gaps in education and skill alignment; inequality and regional disparities; foreign labour migration; urbanization, infrastructure and industry; health care and social services; and environmental and resource constraints.

Nepal's demographic dividend offers a promising path toward economic growth and improved standards of living. However, capitalizing on this demographic shift requires a comprehensive strategy for effectively tackling the challenges.

CHAPTER 1

INTRODUCTION

1.1 Background

Human population is regarded as both the driver or resource and the beneficiary of development. As a driver, human capital serves as a decisive factor in the production function that propels economic growth. Simultaneously, as beneficiaries, humans represent the ultimate recipients of development results, as the benefits of progress are intended to enhance the quality of life and well-being of individuals. The demographic dividend captures this dynamic, as it refers to the economic growth potential that a country can achieve during a period when a significant youth bulge exists. The demographic dividend is the economic growth potential that can result from shifts in a population's age structure. A country with both increasing numbers of labour force and declining fertility has the potential to gain a 'demographic dividend' – a boost in economic productivity that occurs when there are growing numbers of people in the workforce relative to the number of dependents. Effectively harnessing this demographic dividend can lead to substantial improvements in both economic performance and the overall quality of life for the population.

Nepal stands on the verge of a transformative opportunity, with a youth bulge positioned to drive economic activities. This demographic dividend presents a time-sensitive window of opportunity, which, based on the experiences of other countries, is almost irreversible once it passes. The potential for accelerated economic growth and development is significant but requires strategic action to be fully harnessed. This demographic shift offers Nepal a chance to boost production, increase savings, and invest in human capital. However, the realisation of these benefits is not automatic. It demands proactive policies and robust institutional frameworks to create productive employment opportunities, enhance skills, and foster an environment conducive to investment and innovation.

The time-bound nature of this demographic advantage underscores the urgency for Nepal to act decisively. Experiences from other nations demonstrate that failure to capitalize on this opportunity can lead to missed economic potential and increased social challenges. Therefore, it is crucial for policymakers to implement targeted strategies that maximize the benefits of this demographic dividend while also preparing for the eventual ageing of the population.

In essence, Nepal's current demographic profile offers a unique chance to accelerate its economic trajectory. However, the fleeting nature of this opportunity emphasizes the need for immediate, comprehensive, and forward-thinking action to ensure that this potential translates into tangible economic and social progress.

To realize a demographic dividend, a country must undergo a demographic transition – a shift from high fertility and high mortality to low fertility and low mortality. Mortality generally falls earlier than fertility as child survival rates improve, mainly because of improved health and sanitation conditions. Declines in fertility often follow, and as families have fewer children, household resources can make investments in their long-term well-being. Over time, the children born during the early stage of this transition enter the labour force. When the labour force grows more rapidly than the population depend on it, resources become available for investment in economic development. This offers an opportunity for economic growth, if right social and economic policies and investments are made.

To achieve a demographic dividend, a country with declining fertility rates must undertake specific actions to empower young people to fulfil their potential. This includes encouraging employment, investing in education, and ensuring access to adequate nutrition and health including access to sexual and reproductive health care.

However, there are also challenges to achieving a demographic dividend. As waves of young people enter the working-age population each year, the shortage of financial resources will make it difficult to achieve economic development. Thus, there will be a large gap between the demands of young people and the opportunities provided to them.

Nepal is believed to have entered the age of demographic dividend in the early 1990s, which will last until the late 2040s (United Nations, 2015). Unfortunately, more than half of this window of opportunity has already been missed without any significant economic gain. This underscores the urgent need for timely policies that enable the country to seize this opportunity in the coming two decades. Failing to do so could entail that Nepal misses another half period of the window of opportunity to fully capitalize on its human capital for economic development.

According to the latest National Population and Housing Census, the share of the working-age population constitutes 65.2 percent of Nepal's total population, while the non-working population accounts for 34.8 percent in 2021. Furthermore, the share of the young population and old-age population constitutes 27.8 percent and 7 percent respectively in 2021. These figures fulfil the United Nations criteria for Nepal to have been entered into the demographic window of opportunity as the shares of those under 15 years and those 65 years and above are below 30 percent and 15 percent of the total population respectively (UN, 2004 as cited in UNFPA, 2018).

This clearly indicates that the country is undergoing a significant demographic transition resulting in the potential for demographic dividends that could shape the country's future economic landscape. Consequently, with a growing number of young people entering the workforce, the country has a unique opportunity to capitalize on its demographic dividend. This report aims to explore how Nepal can harness this potential to accelerate economic growth and improve the quality of life for its citizens.

This report explores and documents how Nepal can harness its demographic dividend to accelerate economic growth and improve the quality of life for its citizens. It focuses specifically on the issues of:

i. Outlining Nepal's current demographic trends, including the composition and changes in the working-age and dependent populations, and analyzing their impact on the economy and society;

ii. Examining population growth, literacy, educational attainment, labour force participation, employment, absentee population, fertility and mortality in association with age composition of the working-age population;

iii. Reviewing the construction of the Demographic Dividend Index (DDI) and the Demographic Dividend Effort Index (DDEI) for Nepal and assessing the country's progress in leveraging its demographic dividend; and

iv. Reviewing and assessing the effectiveness of current government policies aimed at capitalizing on the demographic dividend and propose policy recommendations to enhance the benefits of demographic changes.

1.2 Evolution of the concept of the demographic dividend

The demographic dividend is an economic opportunity that arises from a shift in a country's population structure. As fertility rates decline and life expectancy increases, the working-age population grows in comparison to the dependent population (children and the old-age population). This demographic transition creates the potential for accelerated economic growth, provided that investments are made in human capital and policies are implemented to harness the larger labour force productively. As shall be presented, the evolution of the demographic dividend concept can be traced through several stages of understanding and application.

1.2.1 Early understanding (1950s-1970s)

The early post-World War II period saw a growing concern amongst economists and policymakers about the rapid rate of population growth, especially in developing countries. Scholars, particularly those influenced by the work of Coale and Hoover (1958), emphasized the economic challenges posed by high fertility and rapid population expansion. These studies often focused on the potential negative impacts of large, growing populations on economic development, such as strains on resources, infrastructure, and public services. At this stage, the concept of a "demographic dividend" had not yet been formally developed. The prevailing discourse revolved around controlling population growth through fertility reduction and family planning to mitigate the adverse effects of overpopulation (Coale & Hoover, 1958).

1.2.2 Formalisation of the demographic dividend (1980s-1990s)

It wasn't until the 1980s and 1990s that economists began to formally identify the potential economic benefits of demographic transition. The concept of the demographic dividend gained prominence through research on East Asian economies which had experienced rapid economic growth after their demographic transitions. Economists like David Bloom and Jeffrey Williamson argued that these economies were able to capitalize on a favourable age structure – where the proportion of the working-age population significantly outnumbered dependents, especially children – during the transition (Bloom & Williamson, 1998). This shift created what was termed the "first demographic dividend," where the reduction in the dependency ratio allowed for higher per capita productivity and economic growth. The economic success of countries like South Korea, Taiwan, and Singapore was attributed in part to this demographic advantage, in addition to their investments in education, health, and infrastructure.

The East Asian experience highlighted how demographic transitions, if supported by appropriate policy measures, could turn population growth into an economic asset rather than a liability. The demographic dividend was thus seen not as a natural outcome of demographic change but as a window of opportunity that needed to be actively managed through economic policies, investments in human capital, and job creation.

1.2.3 Broader recognition and global relevance (2000s)

By the early 2000s, the concept of the demographic dividend was gaining broader recognition as a key element of development policy, particularly in countries undergoing demographic transitions in Africa, South Asia, and Latin America. The United Nations Population Fund (UNFPA) and the World Bank began promoting the idea that countries with young populations could achieve significant economic gains if they invested in education, healthcare, family planning, and employment opportunities.

For instance, India, one of the world's most populous countries, entered a period of demographic transition where a significant portion of its population became working-age. Policymakers and international organisations stressed that India had a critical opportunity to capitalize on its demographic dividend by focusing on skilling its young population and providing opportunities for employment (UNFPA, 2014). Similarly, in sub-Saharan Africa, where fertility rates remained relatively high, the demographic dividend became central to discussions on how to manage population growth and improve economic outcomes. This period also introduced the concept of a "second demographic dividend," which occurs when the now-larger, more productive workforce begins to save and invest, leading to capital accumulation and sustained economic growth, even after the initial window of demographic advantage closes (Mason, 2005).

1.2.4 Integration into national policy frameworks (2010s-Present)

In the 2010s, the demographic dividend concept became an integral part of national development strategies in many countries, particularly those in transition from high to lower fertility rates. For example, Nepal's National Population Policy 2015 explicitly recognized the demographic dividend as a key opportunity for sustainable development. The policy outlined strategies to harness this opportunity by promoting youth employment, improving access to education and healthcare, and managing migration (NPC, 2015). It emphasized the importance of aligning demographic trends with economic policies to create a productive and healthy workforce.

Similarly, other countries, such as Nigeria and Ethiopia, began to adopt policies that aimed to harness their young populations. They focused on improving human capital, expanding access to family planning, and promoting economic reforms that could create jobs and stimulate growth (IMF, 2021). The Fifteenth Plan (2019/20-2023/24) in Nepal also emphasized human capital development as a key strategy to leverage the demographic dividend, with initiatives focused on education, skill development, and employment creation (NPC, 2020).

While these policy frameworks acknowledged the potential of the demographic dividend, they also underscored the challenges of implementation, particularly in resource-constrained environments. Countries were urged to create comprehensive strategies that integrated education, health, labour markets, and social protection systems to fully capitalize on their demographic transitions (Lee & Mason, 2010).

1.2.5 Emerging challenges and opportunities

In the current era, the demographic dividend is increasingly viewed as a time-sensitive opportunity. While many developing countries still have a large proportion of young people, the window to reap economic benefits is narrowing as populations continue to age. Countries like Japan and some European nations, which had previously benefited from a demographic dividend, are now grappling with ageing populations and shrinking workforces. This has raised awareness in developing countries about the need to plan for future demographic changes by creating robust social security and healthcare systems.

There is also a recognition that merely having a large working-age population is not sufficient. Countries must ensure that their youth are well-educated, skilled, and employed in productive sectors. The mismatch between education outcomes and labour market needs has become a major concern in many countries, as have issues related to urbanization, migration, and environmental sustainability.

In the context of Nepal, for example, there is an increasing emphasis on addressing the challenges posed by labour migration, both internal and international, and ensuring that the economy can absorb

a growing workforce. Policies now focus not only on short-term gains but also on preparing for the long-term demographic challenges associated with ageing populations (NPC, 2015).

The evolution of the demographic dividend concept reflects a shift from seeing population growth as a challenge to recognizing it as an opportunity for economic development. While the potential benefits of the demographic dividend are well-documented, realizing these benefits requires proactive policy measures, particularly in the areas of education, healthcare, family planning, job creation, and social security. As more countries enter periods of demographic transition, the demographic dividend will continue to be a critical component of development strategies aimed at achieving sustained economic growth and improved living standards.

1.3 Duration of demographic dividend in Nepal

Nepal's transition into the demographic dividend phase has been gradual, and various sources mention slightly differing timelines. Table 1.1 provides an overview of the demographic dividend periods based on multiple sources.

Table 1.1: Duration of demographic dividend in Nepal across sources

SN	Source	Entry year	Exit year	Duration
1	United Nations. (2015). *World Population Prospects* POP/2, POP/8-1. New York: UN.	1992	2047	55 years
2	World Bank. (2016). *Nepal: Demographic Transition and the Labour Market*. Washington, DC: World Bank Group.	1990s	2036-2046 (approx.)[1]	40-50 years (approx.)
3	Kharel (2020). Demographic Dividend and Economic Growth in Nepal. *Journal of Population and Development*, 1(1), 60-75.	2000	2050	50 years
4	Asian Development Bank. (2016). *Tapping the Potential of Nepal's Demographic Dividend*. Manila: Asian Development Bank.	Early 2000s	2055	50-55 years (approx.)[2]

1 The World Bank report does not provide a specific exit year yet mentions "the next two to three decades" from 2016. As such, an estimated range has been provided.

2 The Asian Development Bank report mentions "early 2000s" for the entry year, which is not a specific year but a general timeframe.

SN	Source	Entry year	Exit year	Duration
5	Adhikari (2013). Demographic Dividend and Its Implication in Nepal. *Himalayan Journal of Sociology and Anthropology*, 6, 121-133.	1995	2045	50 years
6	Shakya & Gnawali (2025). *Thematic Report on Demographic Dividend in Nepal* (This Report). Kathmandu: NSO.	1991-2001	2051	50-55 years

Source: Based on literature review and population projection of Nepal using 2021 Census data.

Based on the literature review, there are variations in estimates across different sources, which is common in demographic projections due to diverse methodologies and data sources. While the exact starting year varies slightly, most sources indicate that Nepal entered the demographic dividend stage between the late 1990s and early 2000s, which is likely to extend until approximately 2045-2055. It suggests that Nepal is currently in the midst of a window of opportunity, with a significant portion of its workforce available for economic activities. It can therefore be concluded, based on literatures using different modules of demographic dividend from various sources and population projections using 2021 Census data, that the demographic dividend in Nepal started in-between 1991 and 2001 and may end around 2051, spanning its duration about 50-55 years (Table 1.1).

In essence, it's important to recognize that the demographic dividend isn't automatically realized but represents a potential for economic growth. Realizing this potential requires proactive measures such as strategic policies and investments in education, health, and job creation.

1.4 Policy review of key areas of demographic dividend in Nepal

This section reviews key policies that are vital in realizing demographic dividend in Nepal. These include the National Population Policy 2015, the Fifteenth Plan (2019/20-2023/24), National Education Policy 2019, National Health Policy 2019, employment-related policies and strategy frameworks, and the Sixteenth Plan of Nepal (2024/25-2029/30).

1.4.1 National Population Policy 2015

Nepal's population policy has evolved over time to address the country's changing demographic landscape and capitalize on the potential demographic dividend. Nepal's policy efforts aim to create an enabling environment to harness this opportunity. Nepal's first explicit population policy, formulated in 1976, primarily focused on fertility reduction. As the country progressed through its demographic transition, subsequent policies were adapted to address broader population dynamics.

The National Population Policy 2015 is the most recent comprehensive framework addressing population issues in Nepal. It recognizes the demographic dividend as a critical opportunity for national development and integrates population management into development planning (MoHP, 2015). The policy aims to promote balanced population growth, enhance the quality of life, and mainstream population issues into the broader development strategy.

Acknowledging the significant youth population during the demographic dividend period, the 2015 Policy emphasizes improving access to quality education and skill development, promoting youth employment and entrepreneurship, and ensuring youth participation in decision-making processes. Additionally, the policy aims to improve maternal and child health, ensure access to family planning services, and promote reproductive health and rights. These efforts are essential for maintaining a healthy and productive workforce.

Given Nepal's high rate of out-migration, the policy addresses managing both internal and international migration, protecting the rights of migrant workers, and harnessing remittances for development. Effective migration management is crucial for maximizing the benefits and minimizing the drawbacks of migration.

While focusing on the current youth bulge, the policy also prepares for future demographic shifts by developing social security systems for the old-age population, promoting intergenerational solidarity, and ensuring healthcare access for older populations.

The policy emphasizes gender mainstreaming across all sectors to fully utilize the potential of the entire population during the demographic dividend period. Ensuring gender equality is fundamental for comprehensive development. Furthermore, addressing regional disparities in population distribution and development is another key focus of the policy. This aims to ensure equitable development across different regions of the country.

Strengthening population data systems and promoting research to inform evidence-based policymaking are essential components of the policy. Reliable data and research are crucial for effective planning and implementation. Recognizing that harnessing the demographic dividend requires coordinated efforts across sectors, the policy promotes the integration of population issues into all development plans and programs.

Despite the comprehensive framework, implementation gaps remain a significant challenge due to limited resources and institutional capacity. Effective coordination among various ministries and departments is often lacking, and the policy has been criticized for not adequately addressing rapid urbanization, brain drain, and the link between population dynamics and environmental sustainability. Moreover, implementing the policy in the new federal context presents additional challenges.

Nepal's population policy acknowledges the demographic dividend and aims to create an enabling environment to harness this opportunity. However, effective implementation and addressing emerging challenges are crucial for the policy to successfully contribute to Nepal's development during this demographic window of opportunity. Updating the policy to align with the new federal context is also necessary for its continued relevance and effectiveness.

1.4.2 Fifteenth Plan of Nepal (2019/20-2023/24)

The Fifteenth Plan of Nepal demonstrates a clear recognition of the demographic dividend's potential and outlines comprehensive strategies to harness it (NPC, 2020). The plan emphasizes human capital development through improved education and healthcare, focuses on employment generation and entrepreneurship promotion, and aims for higher economic growth and increased investment. Additionally, it also includes youth-focused initiatives, promotes gender equality and social inclusion, addresses migration management, and expands social security measures. Furthermore, the plan promotes technology adoption and innovation, focuses on governance improvement, and aims for balanced regional development.

The implementation of Nepal's demographic dividend strategies faces numerous obstacles. Key challenges include potential gaps in execution, limited resources, and coordination difficulties within the federal structure. The country's vulnerability to external shocks further complicates matters. Additionally, there are concerns about the specificity of the proposed strategies and the robustness of monitoring systems designed to track progress.

Questions persist regarding the effectiveness of private sector engagement and how to address the mismatch between available skills and labour market demands. While Nepal has made significant strides in health and education indicators, hurdles remain in translating these achievements into tangible benefits. The country struggles with effective policy implementation, mobilizing necessary resources, and adapting to evolving circumstances. A particularly pressing issue is the creation of productive and decent employment opportunities for the expanding workforce within the country and minimizing outflows of youth for foreign employment. These challenges underscore the complexity of harnessing Nepal's demographic dividend. To succeed, policymakers must not only devise comprehensive strategies but also ensure their effective execution in a dynamic and often unpredictable environment.

1.4.3 National Education Policy 2019

Nepal's National Education Policy 2019 represents a comprehensive approach to aligning the country's education system with its potential demographic dividend. The policy adopts a holistic view of education, integrating academic knowledge with practical skills and moral education (MoEST, 2019). This approach is crucial for developing well-rounded individuals who can effectively contribute to the economy during the demographic dividend period.

A key focus of the policy is on improving the quality of education at all levels, which is essential for building a skilled workforce capable of driving economic growth. The policy emphasizes teacher training, curriculum development, and modern teaching methodologies. Additionally, it places significant emphasis on skill development and enhancing employability, aiming to bridge the gap between education and the job market by promoting vocational and technical education.

The policy also prioritizes science, technology, engineering and mathematics (STEM) education and the integration of information, communications and technology (ICT), recognizing their importance in preparing youth for future jobs and the digital economy. This focus is crucial for developing digital literacy among Nepal's youth and enhancing their global competitiveness. Furthermore, the policy reaffirms Nepal's commitment to inclusive education, aiming to ensure access to quality education for all, including marginalized groups and children with disabilities.

Promoting lifelong learning and research and innovation in higher education are other key aspects of the policy. These elements are vital for maintaining productivity throughout the extended working-age period associated with the demographic dividend and for developing a knowledge-based economy. The policy also advocates for increased decentralisation and local participation in education management, which can lead to more context-specific educational interventions.

Finally, the National Education Policy 2019 aligns Nepal's education system with the Sustainable Development Goals (SDGs), particularly Sustainable Development Goal 4 on quality education. This alignment ensures that Nepal's efforts to leverage its demographic dividend contribute to sustainable development. While the policy demonstrates a clear understanding of education's role in harnessing the demographic dividend, its effectiveness will largely depend on successful implementation, adequate resource allocation, and the ability to overcome existing challenges in Nepal's education sector.

In addition to the National Education Policy 2019, Nepal has implemented several other education-related policies and strategies that are relevant to harnessing its demographic dividend. The School Sector Development Plan (2016-2023) aims to improve access, equity, and quality of school education, with a focus on enhancing learning outcomes and employability skills. The Technical and Vocational Education and Training (TVET) Policy 2012 emphasizes skill development and vocational training to bridge the gap between education and the job market. The Higher Education Policy 2015 focuses on improving the quality and relevance of tertiary education, promoting research and innovation. The information, communication and technology (ICT) in Education Master Plan (2013-2017) aimed to integrate technology into the education system, enhancing digital literacy among students. The Non-Formal Education Policy 2007 supports lifelong learning opportunities, particularly for adults who missed formal education. These policies collectively demonstrate Nepal's comprehensive approach to reforming its education sector to better prepare its youth for the workforce and capitalize on the demographic dividend.

Nepal faces significant hurdles in implementing its education policies effectively. Key issues include inadequate infrastructure and resources, especially in rural areas, teacher shortages in STEM subjects, and a mismatch between education outcomes and labour market demands. The COVID-19 pandemic has widened the digital divide in education access, while political instability has hindered consistent policy implementation and long-term planning in the education sector.

To leverage its demographic dividend, Nepal should prioritize increasing investment in education infrastructure and technology, particularly in underserved areas. Strengthening teacher training, especially in STEM fields, and aligning curricula with market needs through industry collaboration are crucial. Embracing digital learning platforms can promote inclusive access. Ensuring policy continuity despite political changes and regularly adapting strategies based on evidence will be essential for Nepal to harness its demographic dividend through education.

1.4.4 National Health Policy 2019

Nepal's National Health Policy 2019 plays a crucial role in setting the stage for the country to harness its demographic dividend, despite not explicitly mentioning this concept. However, the policy's emphasis on universal health coverage, reproductive health, and adolescent health directly contributes to maintaining a healthy and productive workforce which is essential for realizing the demographic dividend. By focusing on these areas, the policy helps manage population growth, improve family planning, and prepare the future workforce for economic productivity (MoHP, 2019).

The policy's attention to non-communicable diseases, mental health, and nutrition further supports the health and well-being of the working-age population. Its commitment to health system strengthening, health education, and promotion also contributes to creating a healthier population capable of driving economic growth. The policy's recognition of the need for inter-sectoral coordination and its emphasis on gender equality and social inclusion align well with the holistic approach required to maximize the demographic dividend.

Other key health-related policies that complement the National Health Policy 2019 in the context of the demographic dividend include the National Adolescent Health and Development Strategy (2018-2025) and the National Family Planning Policy (2011). The Adolescent Health and Development Strategy focuses on improving the health and well-being of young people who will soon enter the workforce, addressing issues such as early marriage, teenage pregnancy, and substance abuse. This strategy is crucial for preparing a productive workforce that can drive Nepal's economic development.

The National Family Planning Policy, while older, remains relevant to the demographic dividend. It aims to ensure universal access to quality family planning services, which is crucial for managing population growth and improving maternal and child health. By enabling couples to plan their families, this policy contributes to reducing the dependency ratio – a key factor in realizing the demographic dividend.

It also supports women's empowerment and participation in the workforce by giving them control over their reproductive choices. However, it requires review, particularly when keeping emerging demographic trends in view.

The Nepal Health Sector Strategy (2015-2020) is another important policy document that aligns with the goals of harnessing the demographic dividend. It focuses on improving health service delivery, health sector governance, and health systems to ensure equitable and quality healthcare for all Nepali citizens. This strategy's emphasis on strengthening primary healthcare and addressing health inequities contributes to maintaining a healthy workforce across all segments of society.

While these policies collectively create a supportive framework for realizing Nepal's demographic dividend, their success depends on effective implementation, adequate resource allocation, and coordination with other sectoral policies, particularly those related to education, employment, and economic development. The government should ensure that these health policies are not implemented in isolation but are integrated into a broader strategy to capitalize on Nepal's demographic opportunity. This integrated approach will be crucial in transforming Nepal's young population into a driving force for economic growth and development.

1.4.5 Employment related policies and strategy frameworks

Nepal's employment policy and strategy framework has evolved to address the country's unique challenges and opportunities in the labour market, particularly with the potential demographic dividend. The National Employment Policy 2071 (2014) is central to this strategy, aiming to create productive, non-discriminatory, and decent employment opportunities for the working-age population. It focuses on promoting employment-centric economic growth, developing human resources to meet market demands, improving labour market information systems, enhancing social protection for workers, and promoting entrepreneurship and self-employment (MoLE, 2014). The Labour Act 2074 (2017) complements this by establishing minimum wage standards, outlining occupational safety and health requirements, prohibiting workplace discrimination, mandating social security contributions, and regularizing informal sector workers (NLC, 2017).

To address immediate employment needs, the Prime Minister Employment Programme (PMEP) 2018 guarantees a minimum of 100 days of employment to unemployed individuals, focusing on public works projects, unemployment allowances, and skill development training. The National Youth Policy 2072 (2015) indirectly supports employment strategies by emphasizing youth skill development, promoting youth entrepreneurship, and encouraging youth participation in national development (MoYS, 2015). Additionally, the Foreign Employment Policy 2068 (2012) ensures safe and dignified foreign employment, maximizes benefits from overseas work, and develops the skills of migrant workers (MoLE, 2012).

Despite these comprehensive policies, Nepal faces significant employment challenges, including high unemployment and underemployment rates, especially among youth. There is a notable discrepancy between education/skills and job market demands, and the large informal sector with limited social protection continues to dominate the economy. The high dependence on foreign employment and remittances, coupled with limited industrial development and job creation in the formal sector, presents ongoing challenges for policymakers.

However, Nepal also has several opportunities in the employment sector. The large young population presents a potential demographic dividend if properly harnessed. Increasing focus on vocational and technical education can help address the skills misalignment. The growing service sector, particularly in IT and tourism, offers new employment avenues. Additionally, there is potential for agricultural modernisation, agribusiness development, and opportunities in renewable energy and sustainable development sectors.

In the wake of the COVID-19 pandemic, there has been a renewed focus on domestic employment generation and the reintegration of returning migrant workers. There is increasing emphasis on digital skills and the gig economy, reflecting global trends in work patterns. The government is also working on updating the National Employment Policy to address current challenges and opportunities, recognizing the need for adaptive strategies in a rapidly changing economic landscape.

While Nepal has developed various policies and programs to address employment issues, significant challenges remain. The effectiveness of these strategies depends on their implementation, coordination among various sectors, and alignment with broader economic development goals. There is a need for continued focus on skill development, job creation in the formal sector, and leveraging Nepal's demographic dividend through targeted employment strategies. As Nepal navigates its economic development path, refining and effectively implementing its employment policies will be crucial for harnessing its human capital and achieving sustainable growth.

1.4.6 Sixteenth Plan of Nepal (2024/25-2029/30)

The Sixteen Plan of Nepal recognizes the critical importance of harnessing the country's demographic dividend to foster sustainable economic growth and development. This policy review focuses on the plan's strategies and provisions aimed at leveraging Nepal's demographic advantage (NPC, 2024).

The plan acknowledges that 67 percent of Nepal's population is of working-age (15-59), as per the National Census 2021. This plan recognizes that the country's demographic dividend window is projected to remain open until 2103 B.S. (2046 A.D.). This presents a significant opportunity for economic growth, but also underscores the urgency of implementing effective policies before this demographic window closes due to population ageing. The key policy provisions in the plan are presented below:

Human resource development:	The plan emphasizes developing a skilled, professional, and service-oriented labour force aligned with national labour market needs. It proposes the creation and implementation of National Human Resource Development and Operations plans, with a focus on addressing skills shortages and incongruity in the labour market.
Increasing labour productivity:	The plan advocates for targeted investments in human resource development to enhance labour productivity, which is crucial for increasing national production and creating a self-reliant economy.
Sub-national governance approach:	Recognizing the importance of coordinated efforts, the plan calls for effective accountability, cooperation, and partnership among federal, provincial, and local governments in human resource development initiatives.
Migration management:	The plan proposes a systematic approach to managing both internal and external migration. It suggests formulating migration policies linked to economic activities and promoting integrated settlement development to reduce pressure on services and infrastructure.
Urbanization strategy:	The plan aims to channel the demographic dividend into productive activities through regulated migration and systematic urbanization, focusing on corridor and cluster-based development.
Resource utilisation:	The plan emphasizes maximizing the use of natural resources alongside the demographic dividend to strengthen provincial and local economies.
Innovation and entrepreneurship:	To achieve economic growth targets, the plan promotes innovation, entrepreneurship, and sustainable utilisation of natural resources, aiming to obtain additional demographic dividends through high-growth investments.
Holistic approach:	The plan advocates for integrating population issues into all aspects of the development process and adopting innovative approaches to population management.

Nepal's Sixteenth Plan demonstrates a comprehensive understanding of the potential of the demographic dividend and the urgency of capitalizing on it. The plan's multi-faceted approach, addressing skills development, migration management, and resource utilisation, shows a strategic vision for leveraging the country's young workforce.

However, the success of these policies will depend on effective implementation, which requires strong coordination among different levels of government and various stakeholders. The plan rightly emphasizes this aspect, recognizing the need for shared accountability and partnerships.

The focus on aligning skill development with labour market needs is particularly crucial as it addresses the mismatch between education outcomes and job market requirements, one of the key challenges in harnessing demographic dividends.

The plan's approach to migration and urbanization is forward-thinking, aiming to turn potential challenges into opportunities for economic growth. However, careful planning and execution will be necessary to ensure that urbanization and migration contribute positively to economic development without straining existing infrastructure.

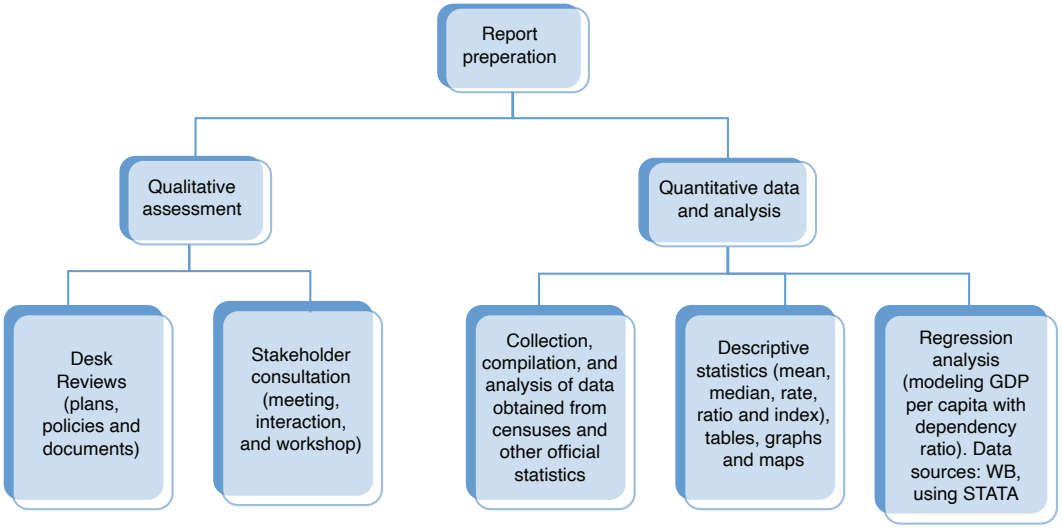
Nepal's Sixteenth Plan presents a well-rounded strategy for leveraging its demographic dividend. The success of these policies will be critical in determining whether Nepal can transform its current demographic advantage into sustained economic growth and development.

CHAPTER 2

METHODOLOGY

This report adopts a mixed approach to comprehensively analyze the demographic trends in Nepal and evaluate the country's potential for harnessing its demographic dividend. By integrating both quantitative and qualitative techniques, the report captures a holistic view of Nepal's demographic landscape and its socio-economic implications. The key components of the methodology cover data collection, data preparation and analysis, index construction and expert feedback (Figure 2.1).

Figure 2.1: Process of report preparation



2.1 Data sources

This report used data obtained from the National Population and Housing Census (NHPC) 2021, supplemented by earlier census reports and official statistics from the National Statistical System (NSS). These sources provided a comprehensive and representative dataset to analyze demographic changes.

In addition to official statistics from national sources, the report also incorporated data from the World Bank to provide broader contextual insights. The combination of national and international data helped enrich the understanding of Nepal's demographic trends and supported the generalisation of findings.

Furthermore, national plans and policy frameworks focusing on the demographic dividend and socio-economic growth in Nepal were reviewed to contextualize the country's efforts in addressing demographic shifts towards the realisation of demographic dividend within the broader policy framework. This qualitative aspect helped interpret how the demographic changes are addressed within national development strategies.

2.2 Data preparation, visualisation and analysis

Data preparation and analysis were crucial steps in ensuring the accuracy and reliability of the findings. The report utilized a range of tools to handle, visualize and analyze the data:

- MS Excel was used for preliminary data organisation and cleaning, including the creation of basic tables, graphs and maps;
- STATA was used for statistical analysis, particularly for performing regression modeling and hypothesis testing. The report employed ordinary least squares (OLS) regression analysis to estimate the effects of demographic shifts along with temporal and historical changes on Nepal's economic performance. The use of STATA allowed for advanced statistical testing, including multicollinearity and autocorrelation checks, and heteroscedasticity tests ensuring the robustness of the results; and
- Geographic information systems (GIS) were used to generate spatial representations of demographic data. GIS enabled the creation of detailed maps showing the geographic distribution of key demographic indicators, which added an extra layer of analysis and helped identify regional disparities in socio-economic status and demographic trends.

2.3 Quantitative analysis

The quantitative analysis in this report was focused on exploring trends and patterns in demographic indicators and assessing their relationship with socio-economic variables. The following techniques were employed:

- **Descriptive statistics:** Descriptive statistics were used extensively to summarize and present trends in key demographic indicators such as population growth, fertility rates, mortality rates, and migration patterns. Measures such as mean, median, rate, ratio and percentage were computed to provide a clear overview of the current demographic situation in Nepal.
- Index construction of: i) **Demographic dividend index (DDI):** This index was constructed to evaluate Nepal's economic growth potential arising from favourable demographic shifts. It reflects the extent to which the country can capitalize on its working-age population as a driver of economic growth (Zhang et al., 2016); ii) **Demographic dividend effort index (DDEI):** This index was designed to assess Nepal's progress in creating the conditions necessary to leverage the demographic dividend effectively. The DDEI considers factors such as policy implementation, investments in human capital, and economic strategies aimed at harnessing demographic advantages (Rusatira et al., 2023); and iii) **Wealth index:** A wealth index was computed to assess the socio-economic status of households across different population groups. The wealth index was based on 17 variables relating to household characteristics, utilities, and amenities. Eight of these variables were categorical and transformed into dichotomous values, while others were already binary. Principal component analysis (PCA) was used to calculate the weights for the index. PCA reduces the

dimensionality of the data and identifies the key components explaining household wealth. The first principal component, which explained the most variance in the data, was used as the composite wealth score (Rutstein et al., 2014).

- **Regression analysis:** OLS regression was employed to estimate the impact of demographic shifts on economic performance. This analysis explored how changes in population structure measured by dependency ratio along with temporal change and historical shift after 1995 influence economic variables such as GDP per capita.

2.4 Qualitative analysis

While the quantitative approach focused on numerical data and statistical analysis, the qualitative methods were used to complement this by providing deeper insights into the socio-economic implications of demographic changes. The following qualitative techniques were employed:

- **Policy document review:** The report involved an extensive review of national policy documents, including those related to economic development, human capital investment, and demographic dividend strategies. This review provided a framework for understanding the policy context and the government's approach to addressing demographic shifts.
- **Literature review:** Relevant academic and institutional literature was reviewed to gain insights into the broader discourse on demographic dividend and socio-economic development. This literature informed the analysis of Nepal's demographic trends and provided comparative insights with other countries facing similar demographic challenges.
- **Workshops with experts:** Two workshops were conducted to seek feedback from expert stakeholders from NSO/UNFPA/CDPS, including thematic experts and demographers. These workshops provided an opportunity for experts to review the findings of the research, offer their perspectives, and validate the interpretations of the data. The feedback from these workshops was incorporated into the final analysis, ensuring that the report reflected expert opinions and real-world insights.

2.5 Synthesis and integration of quantitative and qualitative findings

The final analysis integrated the findings from both quantitative and qualitative methods. While the quantitative analysis provided a data-driven assessment of demographic trends, economic potential, and socio-economic disparities, the qualitative insights helped contextualize these findings within Nepal's policy landscape and socio-economic realities. The expert feedback gathered through the workshops played a critical role in refining the conclusions and ensuring that the report's recommendations were grounded in practical, policy-relevant insights.

In summary, this research employed a mixed-methods approach that combined quantitative techniques, including descriptive statistics, PCA, and regression analysis, with qualitative methods, including policy reviews, literature analysis, and expert workshops. This approach allowed for a

comprehensive and nuanced understanding of Nepal's demographic trends, economic growth potential, and socio-economic status. By integrating multiple data sources and analysis techniques, the report provides valuable insights into how Nepal can effectively leverage its demographic dividend for sustainable economic development.

2.6 Methods of computing indicators and indices

2.6.1 Measurement of demographic shifts

Demographic shifts are measured in terms of population growth rate; age structure (examining the proportion of different age groups within the population); dependency ratios (calculating the ratios of dependents – children and old-age population – to the working-age population); fertility rates (including crude birth rate and total fertility rate); mortality rates (including crude death rate and infant mortality rate); and migration status of population at inter-district level, household with absentee population and population absentees.

2.6.2 Measurement of socio-economic status

Literacy rate is measured as the percentage of population who can both read and write and educational attainment is measured as the percentage of the levels of education achieved by the population. Likewise, economic activities are measured in terms of labour force participation rate as the percentage of the population aged 10 years and above that is employed at any time in the reference period or actively seeking employment. Economic performance is measured as gross domestic product (GDP) per capita (constant LCU), GDP growth and gross saving.

2.6.3 Computation of the wealth index

Indicators of socio-economic status can be calculated using a variety of techniques. The worldwide Demographic and Health Survey (DHS) computes a wealth index to show the status of household assets, services and amenities (Rutstein & Staveteig, 2014; MoHP et al., 2023). The 2021 Census wealth index was calculated using census data on the characteristics of households, utilities and amenities. The wealth index was calculated using 17 variables comprising 9 household characteristics, 4 utilities and 4 amenities. The eight variables were transformed into dichotomous values as they are categorical, while the remainder were already in binary results. The weights to define the index are calculated through Principal Component Analysis (PCA). This is a common way of constructing a wealth index (Davila et al., 2014). In this report, the wealth index data already calculated from the data files of 2021 Census were used.

The PCA is to reduce dimensionality that identifies a set of orthogonal axes, called principal component, that capture the maximum variance in the data. The principal components are linear combinations of the original variables in the data set and are ordered in decreasing order of importance. The total variance captured by all the principal components is equal to the total variance in the original data

set. The first principal component captures the most variation in the data reflecting household wealth when using PCA to census micro-data on household wealth. The largest variance maintained from the indicators is better explained by the first principal component than by subsequent components. The first component is empirically shown to relate spending and consumption, whereas high-order components are not (McKenzie, 2005). This PCA-generated score is used as a household's wealth composite score and is one of the criteria used in this report to show how different age compositions of population can vary. As this concerns the population census data, and hence the sample adequacy test, the Kaiser-Meyer-Oklin (KMO) measure of sampling adequacy is not required.

2.6.4 Computation of the demographic dividend index (DDI)

Countries' varying socio-economic, demographic and governmental systems mean that it is difficult to construct a common demographic dividend index (DDI) to assess the performance of demographic dividends. Such an index requires a wide range of demographic, economic and governance data that may not be available for all nations, and the facts that are accessible may not be comparable. However, many initiatives have been taken to create DDIs to monitor the performance of demographic dividends. Many case studies have been carried out using the demographic dividend index in sub-Saharan Africa and Southern and Western Asian nations (Canning et al., 2015; UNFPA, 2017, 2015a, 2015b, 2014; Zhang et al., 2016).

Zhang et al. (2016) developed the demographic dividend index to design and manage United Nations Population Fund (UNFPA) development initiatives using information from the 2011 Integrated Public Use Micro-data Series (IPUMS) Nepali census. This approach adheres to the demographic dividend concept of the World Economic Forum Global Agenda 2014 (WEF, 2014). This framework focuses on the three investment areas of empowerment, education and employment, which are referred to as the 3Es. These areas combine to help people realize their potential, increase their wealth and contribute to development.

The report used 2021 and 2011 Census micro-data to generate a demographic dividend index to highlight national and sub-national performance on key demographic dividend-related human capital metrics. The 3Es are as follows:

Empowerment: Measured in terms of child marriage ratio (CMR). The CMR is defined here as the percentage of women aged 18-24 years who married before turning 18 years for the purpose of calculation of DDI in this report. However, it may deviate from how it is defined elsewhere.

Education: Measured in terms of secondary school net attendance ratio (NAR). It is the percentage of students between the age of 11 and 15 years who attended secondary school for the purpose of calculation of DDI in this report. Secondary level of school, here, is considered as grades 6-10 as practiced before its recent re-classification.

Employment: Measured in terms of the proportion of 15-24 years old who are not in education, employment and training (NEET) per hundred 15-24 years old. This report defines NEET as the number of 15-24 years old who were no longer in the education system and who are not working or had worked for less than six months in the year while looking for work, and who had a reason other than education for not working. As the information about training was not captured in 2021 Census of Nepal, this component is not included in this report.

Expressed as percentages, these three indicators can be given values from 1 to 100. However, due to their opposing directions and inverse relationships with DDI values, child marriage and NEET must be converted into positive numbers by subtraction from 100. Finally, as practiced usually, the DDI was computed as the geometric mean of the three scores for all sub-national levels of the interest.

2.6.5 Computation of the demographic dividend effort index (DDEI)

The demographic dividend effort index (DDEI) is a metric developed to evaluate Nepal's readiness and efforts to harness the demographic dividend, or a period of accelerated economic growth resulting from changes in the age structure of the population.

The methodology for developing the DDEI, as outlined by Rusatira et al. (2023), follows a systematic process that includes expert consultations, structured scoring, and the formulation of the index. However, the literature lacks a comprehensive, detailed methodology. Consequently, this report has adapted and customized the approach to fit the Nepali context, building upon the foundational concepts presented by Rusatira et al. (2023).

The proposed DDEI provides a comprehensive assessment across six key policy areas: population management, health, education, women's empowerment, employment, governance and economic institutions. By analyzing the effectiveness of policy initiatives in these areas, the DDEI offers a holistic view of the country's potential to leverage its demographic transition for economic growth.

The DDEI serves multiple purposes, including benchmarking Nepal's efforts over time and facilitating comparisons with other countries to identify best practices and areas for improvement. This standardized measure helps policymakers evaluate current policies, highlight strengths and weaknesses, and strategically plan resource allocation to maximize the demographic dividend. By focusing on the most impactful areas, the DDEI guides Nepal in transforming demographic potential into tangible economic and social gains, ultimately fostering sustainable development and economic prosperity.

The research team computed the demographic dividend effort index (DDEI) for Nepal. The process involves:

- Developing a customized framework to measure efforts across key sectors such as family planning, education, health, employment, gender equality, governance. The team prepared

the framework considering the importance of each area associated indicators, data availability, and international practices;

- Assigning weights to different indicators based on their importance, otherwise giving equal weight for each sector;
- Collecting and analyzing data to compute the index; and
- Comparing Nepal's index at different years (and, if comparable or possible, with other countries) to identify areas for improvement.

Table 2.1: Steps in the computation of demographic dividend effort index (DDEI)

Steps	Descriptions	Formulas
Framework development	Identify key sectors and corresponding indicators of each sector	
Sectors	Family Planning, Education, Health, Employment, Gender Equality and Governance.	
Weight assignment	Assign weights to each sector/indicator based on importance or equally.	$w_i=\frac{1}{n}$ (equal) , or $\sum_{i}^{n} wi = 1$
Data collection	Gather data for each indicator in all sectors.	
Normalisation	Normalize indicators based on their progression type.	
	Positively progressing good	$I_i=\frac{(Xi-\min(X)}{Max(X)-Min(X)}$
	Negatively progressing good	$I_i=\frac{Max(X)-Xi}{Max(X)-Min(X)}$
	Constant expected	$I_i= 1- \left\| \frac{Xi-T}{T} \right\|$
Index computation	Calculate DDEI for each sector and overall.	$DDEI\_sector= \sum_{i}^{n} (wi*Ii)$
	Overall DDEI	$DDEI = \sum_{j=1}^{7} (DDDI_{sector})$
Comparative Analysis	Compare DDEI across different years and with other countries.	$\Delta DDEI=DDEI_t-DDEI_{t-1}$
Reporting	Visualize trends and provide recommendations.	

2.7 Quality of age data

Since all the measures of demographic dividend are simply based on age composition of population, the data quality regarding age reporting is of immense importance. The data quality on age reporting in different censuses has already been evaluated in various previous publications of National Statistics Office. As such, the quality of data is confined only to age data here and is discussed with regard to levels of data quality on age reporting. The usual methods carried out for evaluation of age reporting errors are the Whipple index, Myer's index, United Nations age-sex accuracy index, age-ratio method (age accuracy index), sex ratio method, survival ratio method, among others (Shyrock & Siegel, 1976). However, only the results from the first three methods are discussed in this report.

The Whipple index is a summary measure of age heaping, or digit preference, ending at terminal digits '0' or '5'. The index for terminal digits '0' and '5' in the age range of 23-62 years is measured by the ratio of the sum of populations at ages of terminal digits '0' and '5' in this range to one-fifth of the total population in this range. The index value ranges from 100 to 500, respectively indicating no digital preference to all ages ending at '0' or '5'. In 2021, a Whipple index of 149 (149 for both males and females) indicates a data quality rating of 'rough' (125-175), yet had improved from an index of 189 (191 for males and 186 for females) in 2011, to which the data quality rating scored 'very rough' (175 or more).

Similarly, the Myers' index indicates the extent of concentration on or avoidance of a particular terminal digit from '0' to '9'. In the Myers' blended method, the proportions of the population ending in each digit are determined from 10 times the total population. Then, the index of preference for each terminal digit is calculated, representing the deviation from 10 percent. Finally, a summary index of preference for all terminal digits is derived as one-half of the sum of the deviations from 10 percent of each terminal digit, regardless of sign. The index is usually measured for the age range of 10-89 years. The value of the index varies from 0 to 90, with zero representing no heaping and 90 for all ages reported at a single digit or single terminal digit. The 2021 data scored a Myers' index score of 9.9 (9.6 for males and 10.1 for females), improving from 15.6 (15.7 for males and 15.6 for females) in 2011.

Likewise, in the United Nation's age-sex accuracy index, the mean of the age-to-age differences for males and females in reported sex ratios, regardless of sign, and the mean deviations of the age ratios for males and females from 100 are applied for evaluating the accuracy of census data on age. The index is the combined sum of 3 times the mean of the age-to-age differences in reported sex ratios, regardless of sign; the mean deviation of the age ratios from 100 for males; and the mean deviation of the age ratios from 100 for females. In this method, the age ratio is defined as the ratio of the population in a given age group to one-half the sum of the populations in the preceding and the following age groups. The index value is evaluated for less than 20 to more than 40, indicating <20 as accurate, 20-40 as inaccurate, and >40 as highly inaccurate. The UN age-sex accuracy index for 2021 Census data was 21.1, continuing to fall within the rating category of 'inaccurate', however this rating improved from a score of 23.2 in 2011.

CHAPTER 3

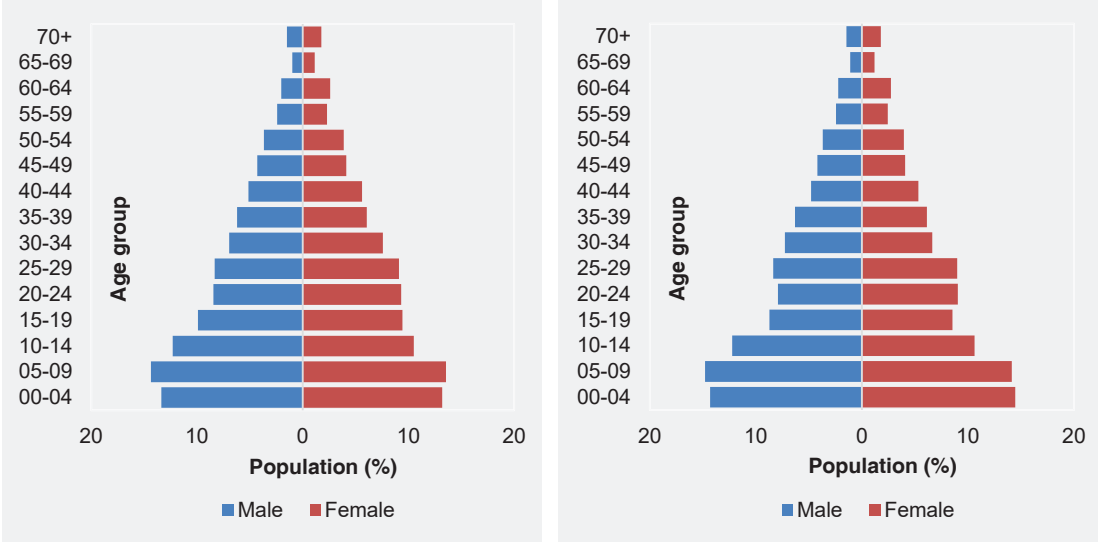
DEMOGRAPHIC TRENDS AND DEMOGRAPHIC DIVIDEND

The age-sex structure of Nepal's population over time by gender is examined here in relation to various compositions of population, such as working-age (15-64), child dependents (0-14), old-age population (65 and above), dependency ratio, and growth rates of these compositions and overall population, to understand the demographic dividend situation of the country.

3.1 Nepal's demographic transition: Insights from population pyramids, 1952/54-2021

The age-sex data of Nepal's population have been available since the 1952/54 census. An analysis of decennial population censuses from 1952/54 to 2021 reveals that the country's demographic structure has undergone significant changes, as illustrated in the population pyramids. These changes reflect shifts in fertility rates, mortality rates, life expectancy, and international migration, influencing the potential for a demographic dividend. From 1952 to 1961, the population pyramid for 1952-54 shows a broad base for both males and females, indicating high birth rates with a significant proportion of child dependents aged 0-14 years (Figure 3.1). By 1961, the proportion of child dependents remains high for both sexes, indicating sustained high birth rates. The working-age population for both males and females is relatively smaller compared to the younger population, with a slightly higher proportion of males in the younger age groups.

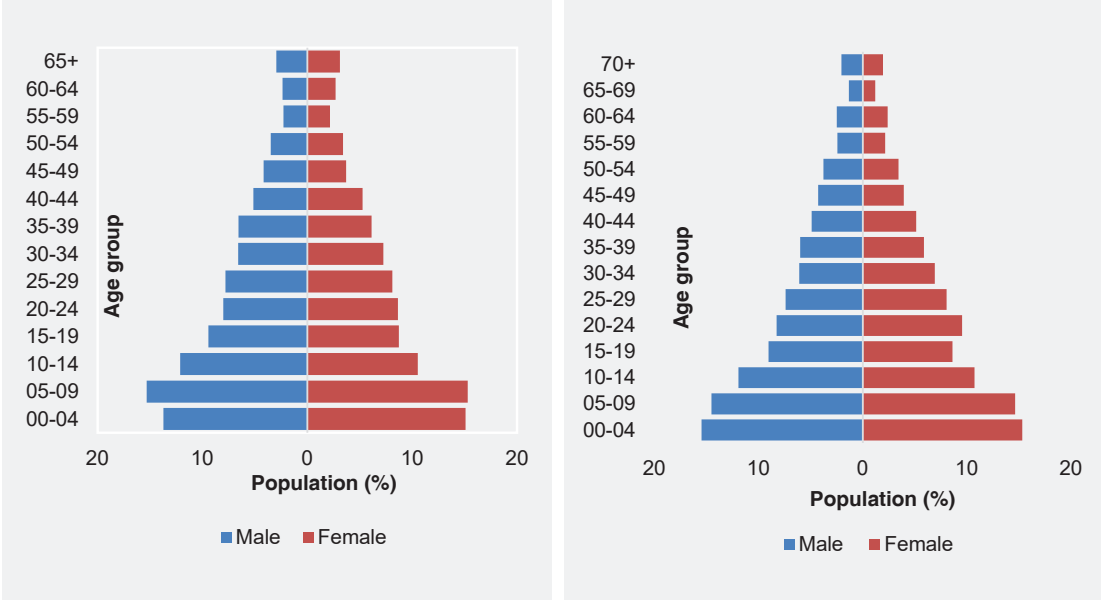
Figure 3.1: Population pyramids, 1952/54 and 1961



Source: Figures constructed based on population census data from 1952/54 and 1961.

By 1971, the base of the pyramid narrows slightly for both sexes, suggesting a beginning of fertility decline or the undercount of children aged 0-4 years. The proportion of the young population (0-14 years) begins to decrease for both males and females, while the working-age population begins to grow. By 1981, the working-age population has grown significantly for both sexes, marking the early stages of a demographic shift. The male-to-female ratio remains fairly balanced in the working-age group (Figure 3.2).

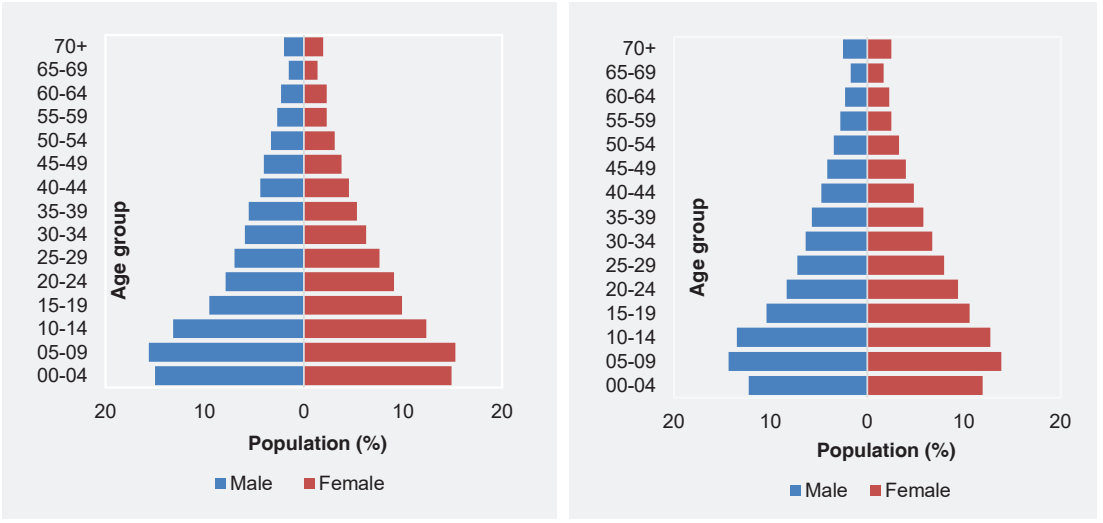
Figure 3.2: Population pyramids, 1971 and 1981



Source: Figures constructed based on population census data from 1971 and 1981.

This trend of narrowing the base continues from 1991 to 2001, with a significant reduction in the young population for both sexes. By 2001, there is a noticeable increase in the proportion of the working-age population for both males and females (Figure 3.3). This indicates a growing potential for a demographic dividend. The old-age population (65 years and above) remains a small segment but begins to show slight growth for both sexes, with slightly more females in the older age groups, reflecting higher female life expectancy.

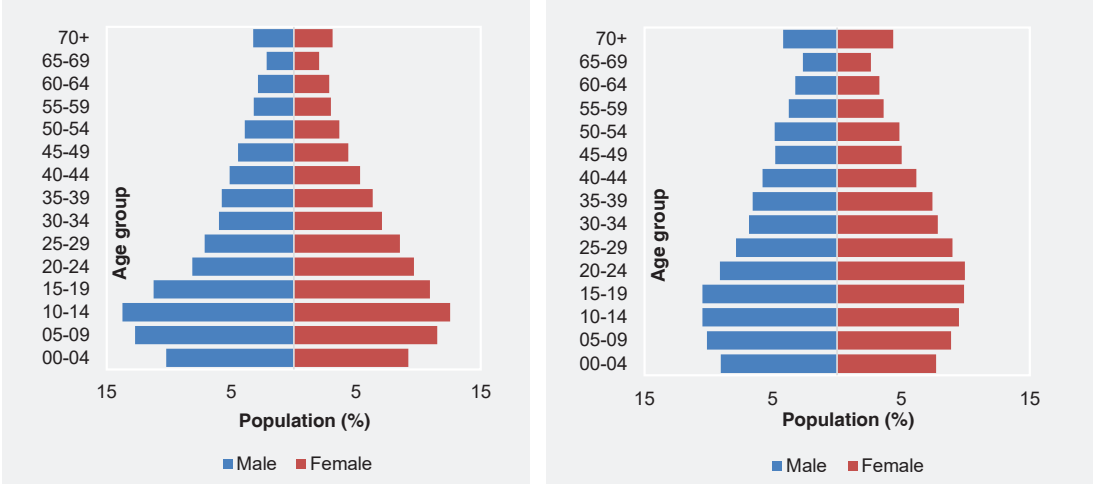
Figure 3.3: Population pyramids, 1991 and 2001



Source: Figures constructed based on population census data from 1991 and 2001.

From 2011 to 2021, the base is shown to narrow further, with the figures of young population stabilizing for both sexes (Figure 3.4). The working-age population reaches its peak proportion, highlighting the potential for economic growth through a demographic dividend. The old-age population continues to grow gradually for both males and females, reflecting improvements in life expectancy. There is a noticeable increase in the proportion of females in the old-age population, again indicating higher life expectancy for women.

Figure 3.4: Population pyramids, 2011 and 2021



Source: Figures constructed based on population census data from 2011 and 2021.

3.2 Broad age group of population, 1952/54-2021

Table 3.1 provides valuable insights into changes in age structure across broad age group population over the census years from 1952/54 to 2021. The data reveals significant shifts in Nepal's population structure from 1952/54 to 2021, indicating a demographic transition that led to a demographic dividend.

Table 3.1: Share of broad age group population (%) over the years (1952/54-2021)

Year	Pre-working-age (<15)	Working-age (15-64)	Post-working-age (65 & above)	Dependents (<15 plus 65 & above)
1952/54	38.6	58.6	2.9	41.4
1961	40.0	57.1	2.9	42.9
1971	41.0	55.9	3.0	44.1
1981	41.4	55.4	3.3	44.6
1991	42.4	54.1	3.5	45.9
2001	39.4	56.4	4.2	43.6
2011	34.9	59.8	5.3	40.2
2021	27.8	65.2	6.9	34.8

Source: Analysis of various census data, 1952/54-2021.

The most striking change from the comparative data set is the substantial increase in the working-age population (15-64 years). This group has grown from 58.6 percent in 1952/54 to 65.2 percent in 2021, representing a 6.6 percentage point increase. This growth has been particularly pronounced in the last two decades, rising from 56.4 percent in 2001 to 65.2 percent in 2021. This expansion of the working-age population is a key indicator of a demographic dividend, as it represents a larger workforce that can contribute to economic growth if properly employed and productive.

Simultaneously, a significant decrease is seen with regard to the proportion of the dependent population. The proportion of dependents (combining pre-working-age and post-working-age groups) has fallen from 41.4 percent in 1952/54 to 34.8 percent in 2021. This decline accelerated after 1991, with the sharpest drop occurring between 2011 and 2021 (from 40.2% to 34.8%). A lower proportion of dependents means fewer people relying on the working-age population, potentially allowing for greater savings, investment, and economic growth.

The pre-working-age (0-14) population sees a dramatic decline, especially in recent decades, from 42.4 percent in 1991 to 27.8 percent in 2021. This indicates a reduction in fertility rates and suggests that Nepal is moving through its demographic transition with the transitional stage of birth rates falling and population growth starting becoming slow. While still relatively small, the post-working-age (65 years and above) population has been steadily increasing, from 2.9 percent in 1952/54 to 6.9 percent in 2021. This trend suggests that Nepal should also prepare for an ageing population in the coming decades.

The current demographic structure, with a large proportion of working-age population and decreasing share of dependent population – especially pre-working population – presents a window of opportunity for Nepal to harness its demographic dividend. However, this window is likely to be temporary, as the population will eventually age, and the share of the dependent population, particularly the old-age population will increase.

Nepal is currently in a favourable demographic position with the potential to reap a demographic dividend. However, this potential can only be realized with appropriate policies and investments in human capital, job creation, and economic development. The window of opportunity is time-limited, making it crucial for Nepal to act swiftly and decisively to leverage this demographic advantage for sustainable economic growth.

3.3 Growth rates of population in Nepal, 1952/54-2021

Table 3.2 presents valuable insights into Nepal's demographic trends from 1952/54 to 2021, particularly in relation to its potential demographic dividend. It compares the average annual exponential growth of population by broad age-group, dependents, and overall population between census years. This analysis focusses on the changing population growth rate among broad age group and overall population and their implications for Nepal's economic development.

Table 3.2: Comparison of average annual growth rate (%) of population by broad age groups and overall population, 1952/54-2021

Year	Pre-working-age (0-14)	Working-age (15-64)	Post-working-age (65+)	Dependents (<15 & 65+)	Overall (all ages)
1952/54-1961	2.11	1.36	1.78	2.09	1.67
1961-1971	2.01	1.53	2.30	2.03	1.75
1971-1981	3.00	2.83	3.62	3.04	2.92
1981-1991	2.33	1.84	2.79	2.36	2.08
1991-2001	1.50	2.67	4.09	1.73	2.25
2001-2011	0.15	1.93	3.61	0.54	1.35
2011-2021	-1.25	1.75	3.54	-0.47	0.92

Source: Analysis of various census data, 1952/54-2021.

The data shows a significant shift in Nepal's age structure over the past six decades. Between 1952/54 and 1961, the pre-working-age population (0-14 years) was increasing at 2.11 percent annually, while the working-age population 15-64 years) grew at a rate of 1.36 percent. Between 2011 and 2021, this

pattern had dramatically reversed, with the pre-working-age population declining at -1.25 percent annually, while the working-age population continued to grow at a rate of 1.75 percent. This shift indicates that Nepal is entering a phase where it could potentially reap a demographic dividend as the demographic dividend occurs when the working-age population grows faster than the young dependent population (Gates Institute, Johns Hopkins Bloomberg School of Public Health, n.d.).

Data shows that this transition began between 1991 and 2001, when the growth rate of the working-age population (2.67%) exceeded that of child dependents (1.50%). This suggests that Nepal entered the demographic window of opportunity in the mid-1990s and is consistent with findings from other studies.

The growth rate of dependents shows a dramatic decline from 2.09 percent in 1952/54-61 to -0.47 percent in 2011-21. This negative growth rate in the dependent population, coupled with continued growth in the working-age population, suggests a favourable demographic structure for economic growth. While the pre-working-age population growth has declined, the post-working-age population growth has remained high, increasing from 1.78 percent in 1961 to 3.54 percent in 2021. This indicates an ageing population trend, which could present future challenges to the demographic dividend. At the current growth rate, the post-working population or old-age population aged 65 years and above is projected to double in approximately 20 years, reaching this milestone by 2041.

The data suggests that Nepal is currently in a demographic window of opportunity. The working-age population is growing while the overall growth rate of the dependents population is decreasing, creating potential for increased productivity and economic growth. However, despite this, challenges persist. The rapid decline in growth of the pre-working-age population (-1.25% between 2011 and 2021) could potentially result in future labour shortages if not effectively managed. Furthermore, the high growth rate of the post-working-age population necessitates careful planning for increased demands in social security and healthcare services. Overall, the population growth rate has decreased from 1.67 percent in 1952-54 to 0.92 percent in 2011-21, indicating a general reduction in population growth that could facilitate more effective management of resources and infrastructure development.

3.4 Dependency ratio, 1952/54-2021

The total dependency ratio in Nepal has shown a remarkable decline, particularly since 1991. From its peak figure of 84.8 in 1991, it has dropped to 53.3 in 2021, indicating a growing proportion of the working-age population relative to dependents (Table 3.3). This trend is primarily driven by a sharp decrease in the child dependency ratio, which fell from 78.4 in 1991 to 42.7 in 2021. Such a dramatic reduction suggests a significant decline in fertility rates, a key characteristic of the demographic transition process.

Table 3.3: Dependency ratios over the years (1952/54-2021)

Year	Child (0-14) dependency ratio	Old-age (65+) dependency ratio	Total (<15 plus 65+) dependency ratio
1952/54	65.9	4.9	70.8
1961	70.0	5.0	75.0
1971	73.4	5.4	78.8
1981	74.7	5.9	80.5
1991	78.4	6.5	84.8
2001	69.7	7.5	77.2
2011	58.4	8.8	67.2
2021	42.7	10.6	53.3

Source: Analysis of various census data, 1952/54-2021.

While the child dependency ratio has been decreasing, the old age dependency ratio has shown a steady increase from 4.9 in 1952/54 to 10.6 in 2021. Although still relatively low, this upward trend indicates an ageing population and improved life expectancy. This dual trend of decreasing child dependency and increasing old-age dependency is typical of countries progressing through the demographic transition.

To maximize the benefits of this demographic dividend, Nepal needs to focus on several key areas. Firstly, substantial investments in education and skills training are crucial in enhancing the productivity of the large working-age population. This should be coupled with policies aimed at job creation to absorb this workforce productively into the economy. Additionally, improving healthcare systems is vital to not only maintain a healthy workforce but also to prepare for the needs of an ageing population in the future.

It's important to recognize that the window for capitalizing on the demographic dividend is limited. As the old dependency ratio continues to rise, Nepal will eventually face the challenges of an ageing population. Therefore, the country should also focus on developing robust pension and social security systems, as well as encouraging savings and investments to support future economic stability.

3.5 Demographic dividend (demographic window of opportunity) and assessing its onset and termination in Nepal

The demographic dividend or demographic window of opportunity is measured in different ways according different sources, yet it is commonly defined through five different attributes: i) when the share of the working-age population (15-64) is larger than the non-working-age share of the population (14 and younger, and 65 or older) (UNFPA, 2020); ii) when the proportion of children (under 15 years) falls below 30 percent, and the share of old-age population (65 year and above) remains under 15 percent (United Nations, 2004 cited in UNFPA, 2016); iii) when the growth rate of the working-age

population surpasses that of the total population (Bloom and Williamson, 1998); iv) when the working-age population grows faster than the child dependents (0-14) (Johns Hopkins Bloomberg School of Public Health, n.d.); and v) when the dependency ratio is about 60 dependents to every 100 working-age population (NPC [Nepal], 2017). Thus, the demographic dividends or demographic windows of opportunities are analysed with respect to these definitions throughout this report.

Nepal is experiencing a significant demographic transition that presents a unique economic opportunity, as highlighted by numerous demographers and researchers (NPC, 2017). However, there is no consensus on the precise timeline of Nepal's demographic dividend phase, including its entry and termination years. While some experts argue that this window of opportunity has only recently emerged, others contend that Nepal is already midway through this crucial period.

This report aims to provide a comprehensive analysis of the onset and termination of Nepal's demographic dividend phase by employing multiple criteria widely used in demographic research. The frameworks examined include: i) The United Nations' and UNFPA's proportion-based definitions; ii) Bloom and Williamson's growth rate approach; iii) The Gates Institute's focus on the dynamics between working-age population and child dependents, and iv) The National Planning Commission's dependency ratio benchmark.

By comparing and contrasting these diverse methodologies, this research seeks to determine when Nepal entered its demographic dividend phase, project when Nepal is likely to exit this phase, and analyze the implications of this demographic transition for the country's socioeconomic development. This multi-faceted approach allows for a more nuanced understanding of Nepal's demographic trajectory, accounting for various perspectives and methodologies in the field.

By synthesizing insights from these different frameworks, this report aims to provide policymakers, researchers, and stakeholders with a comprehensive view of Nepal's demographic dividend, enabling more informed decision-making and strategic planning. The following analysis and discussion will delve into each criterion, presenting findings and interpretations that collectively shed light on Nepal's demographic window of opportunity and its potential impact on the country's future.

3.5.1 Working-age population criterion

The demographic dividend is the economic growth potential that can result from shifts in a population's age structure, mainly when the share of the working-age population (15-64 years of age) is larger than the non-working-age share of the population (14 years of age and younger and 65 years of age and older) (UNFPA, 2020).

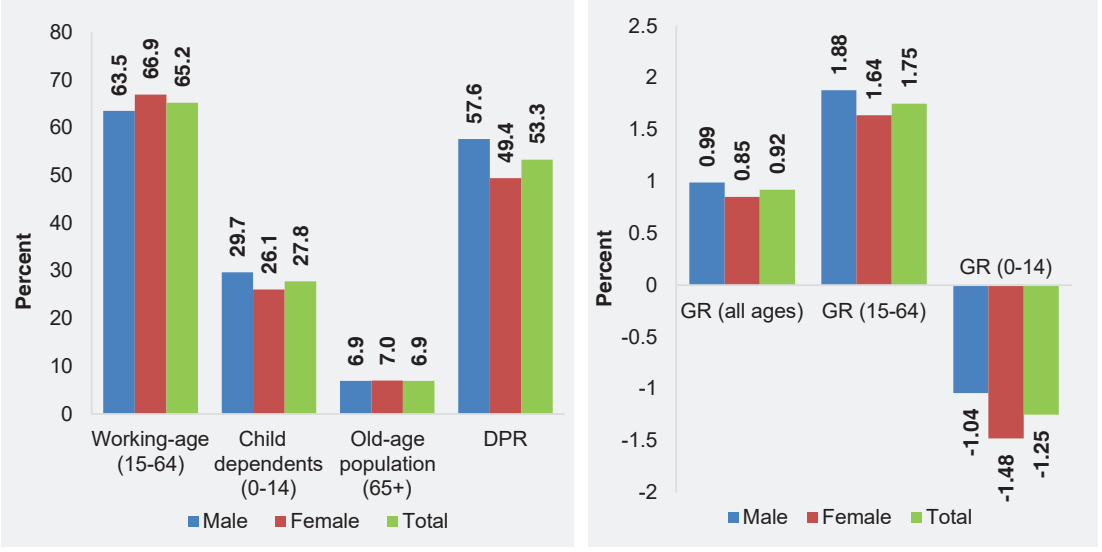
This definition appears to be generic as it does not explicitly mention the cut-off share of the working and non-working population. This lack of specificity is particularly problematic in the context of Nepal, which has consistently shown to possess a larger share of a working-age population compared to the

non-working population since the availability of age-wise data from the 1952/54 census. Therefore, a more precise operational definition is necessary to accurately identify the onset of the demographic dividend phase in Nepal.

UNFPA's generic definition, which focuses on the proportion of the working-age population being larger than the non-working-age population, has been consistent in the context of Nepal since 1952/54, with a share of more than 50 percent population registering as of working-age population. However, this definition lacks specificity, making it less useful for precisely identifying the onset of the demographic dividend in Nepal. Thus, according to this definition, Nepal has consistently had a larger share of its working-age population since 1952/54 and no explicit cut off year can be determined.

Nepal's share of working-age population (15-64) was higher than the share of non-working-age population since 1952/54 and was at 65.2 percent in 2021. It is 63.5 percent for males and 66.9 percent for females, and higher among females compared to males, however, the gender variation is only 3.4 percentage points (Figure 3.5). It is higher in all the geographic regions and wealth quintile categories. The higher proportions of working-age population were found in urban municipalities (66.6%), urban areas (69.9%), Hill zone (67.1%), Bagmati Province (70.6%) and in the highest wealth quintile (71.5%) in 2021 (Table 3.4). It has also increased over the years (2011-2021) in all geographic regions of Nepal and different categories of wealth quintiles (Table 3.4 and Annexs 1-3), but slightly more remarkably in the previously aforementioned areas than others. The continuing higher share of working-age than non-working-age population in Nepal over the years may have supported the possibility to achieve the demographic dividend for economic growth.

Figure 3.5: Various measures of demographic dividend by sex, Nepal, 2021



GR: Growth rate; DPR: Dependency ratio.

In 2021, the share of the working-age population was highest in Manang (75.4%) among the districts, followed by Kathmandu (74.7%), Lalitpur (73.9%), Bhaktapur (73.4%), Kaski (70.5%), Ilam (69.8%), Mustang (69.7%), Chitawan (69.4%), Kavrepalanchok (69.0%) and Makwanpur (67.7%) (Figure 3.6). Likewise, the lowest share of working-age population was observed in the districts like Achham (55.1%), Bajhang (57.0%), Doti (57.2%), Rautahat (57.5%), Bajura (57.7), Kalikot (58.2%), Mugu (58.3%), Jajarkot (58.5%), Humla (58.5%) and Mahottari (59.6%). The higher proportions were seen in all three districts of Kathmandu Valley and in an additional five Hill districts, six districts of Bagmati Province, and in two Mountain districts of Gandaki Province. Most of the districts with lower proportions of working-age population were found in Sudurpashchim and Karnali provinces (4 each) and two from Madhesh Province. There is not a notable set of differences in the ten districts with the highest and lowest share of working-age population during 2011-2021 (Annexs 1-2).

Table 3.4: Different measures of demographic dividend by sex, geographic regions of Nepal and wealth quintile, 2021

Area	Working-age population (%)	Child dependents (%)	Old-age population (%)	Dependency ratio	Growth rate (%) of population	Growth rate (%) of working-age population	Growth rate (%) of child dependents
Nepal	65.2	27.8	6.9	53.3	0.92	1.75	-1.25
Male	63.5	29.7	6.9	57.6	0.99	1.88	-1.04
Female	66.9	26.1	7.0	49.4	0.85	1.64	-1.48
Urban-rural municipality							
Urban municipality	66.6	26.8	6.6	50.2	1.36	2.09	-0.71
Rural municipality	62.6	29.8	7.6	59.7	0.11	1.08	-2.14
Urban-rural area							
Urban	69.9	24.2	5.9	43.1	2.73	3.21	0.96
Peri-urban	63.6	29.7	6.7	57.2	1.06	1.78	-0.73
Rural	63.4	28.5	8.1	57.8	-0.50	0.57	-3.08
Ecological belt							
Mountain	62.5	30.0	7.5	60.0	-0.05	0.99	-2.36
Hill	67.1	25.4	7.5	49.0	0.30	1.25	-2.34
Tarai	64.1	29.4	6.4	55.9	1.54	2.26	-0.33
Province							
Koshi	66.5	26.0	7.5	50.4	0.86	1.62	-1.39
Madhesh	60.5	33.2	6.3	65.2	1.18	1.79	-0.26
Bagmati	70.6	22.1	7.2	41.5	0.97	1.70	-1.58

Area	Working-age population (%)	Child dependents (%)	Old-age population (%)	Dependency ratio	Growth rate (%) of population	Growth rate (%) of working-age population	Growth rate (%) of child dependents
Gandaki	66.9	23.9	9.2	49.4	0.25	1.25	-2.71
Lumbini	65.0	28.5	6.5	53.8	1.24	2.23	-1.07
Karnali	61.8	33.1	5.1	61.9	0.69	1.82	-1.50
Sudurpashchim	62.4	31.0	6.6	60.2	0.52	1.62	-1.81
Wealth quintile							
Lowest	59.1	32.8	8.1	69.1	0.38	1.41	-1.87
Lower	63.0	29.9	7.1	58.7	1.15	2.23	-1.30
Middle	64.3	28.6	7.0	55.4	0.58	1.46	-1.53
Higher	67.4	27.0	5.6	48.3	0.82	1.53	-0.81
Highest	71.5	21.5	7.0	39.9	1.78	2.16	-0.17

Source: Calculations from 2021 Census data.

Figure 3.6: Ten districts with the highest and the lowest share of working-age population, Nepal, 2021

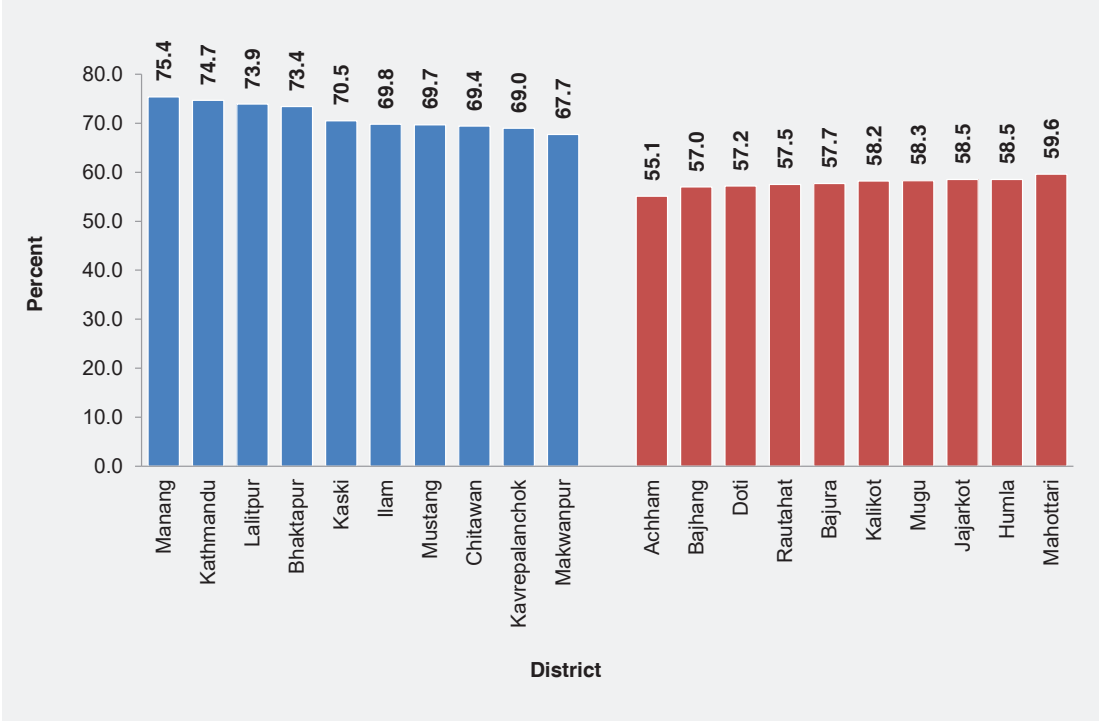
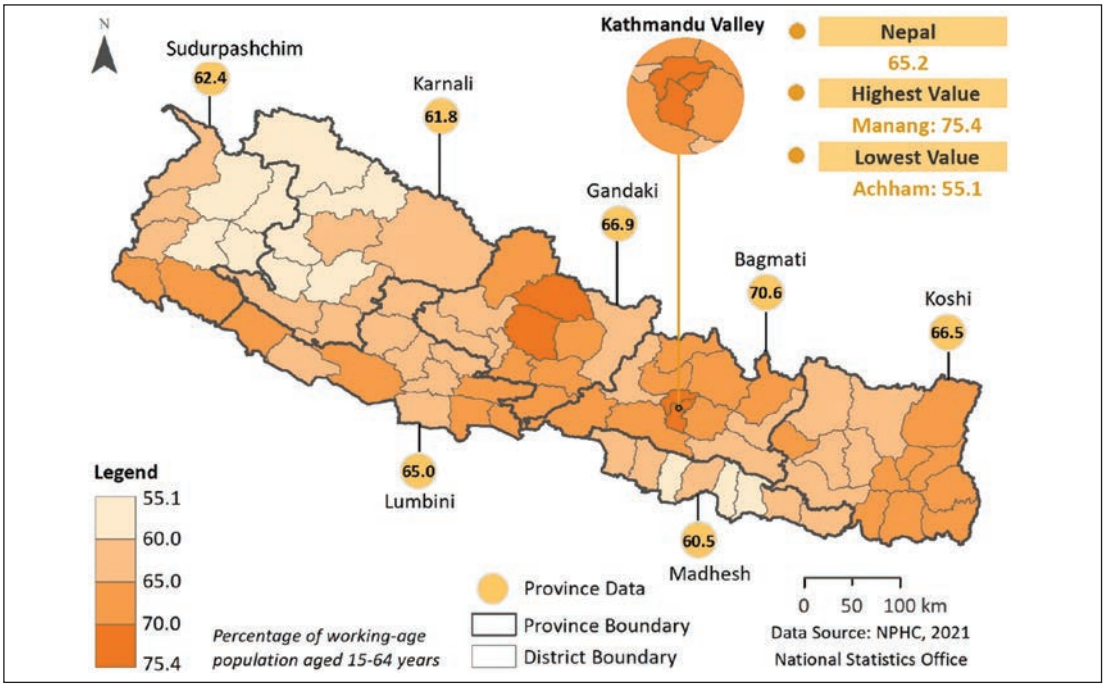


Figure 3.7: The percentage of working-age population by province and district, Nepal, 2021



3.5.2 Children and old-age population criterion

The United Nations provides a widely used operational definition for identifying the demographic dividend phase. According to this definition, a country enters the demographic dividend when the proportion of children under 15 year falls below 30 percent, and the share of the old-age population (65 years and above) to the total population remains under 15 percent (United Nations, 2004 cited in UNFPA, 2016).

This criterion indicates the onset and termination of the demographic window of opportunity. According to this definition, the onset occurs when two conditions are simultaneously met: i) when the proportion of the young population (under 15 years) falls below 30 percent of the total population; and ii) when the old-age population (65 years and above) remains under 15 percent of the total population. Conversely, it also implies that the termination of this demographic window occurs when the share of the old-age population reaches or exceeds 15 percent of the total population. It's worthwhile to note that once a country enters this phase due to declining fertility rates, the process is generally irreversible – fertility rates rarely increase significantly after such a demographic transition. Using these criteria, researchers can identify the specific timeframes for the demographic dividend in various countries, including Nepal.

Table 3.5 presents the estimated share of the dependent population aged below 15 years and aged 65 years and above between the 2011 and 2021 Census years. The data demonstrates that Nepal

entered the demographic dividend phase in 2019, aligning precisely with the United Nations' criteria. Specifically, in 2019, the proportion of the population under 15 years of age fell below 30 percent for the first time. Concurrently, while the proportion of the old-age population (65 years and above) has been increasing annually, it remained consistently below the 15 percent threshold. These demographic shifts, as evidenced by the two key indicators, clearly mark Nepal's entry into the demographic dividend phase as defined by the United Nations in 2019.

Table 3.5: Percentage of dependent population, 2011-2021 and projected percentage of old-age population 65 years and above, 2021-2051

Year[3]	Population under 15 years	Population 65 years & above	Year	Projected population 65 years & above (%)*
2011	34.9	5.3	2021	6.9
2012	34.2	5.5	2026	7.8
2013	33.5	5.6	2031	8.8
2014	32.9	5.8	2036	10.1
2015	32.2	5.9	2041	11.3
2016	31.5	6.1	2046	12.9
2017	30.8	6.2	**2051**	**15.2**
2018	30.1	6.4		
2019	**29.5**	**6.5**		
2020	28.8	6.7		
2021	27.8	6.9		

*Sources: Linear interpolation based on 2011 and 2021 data; and *population projection based on the 2021 Census data.*

While fertility decline is generally irreversible, it's crucial to examine both the entry into and exit from the demographic dividend phase by analyzing the shares of the young population (under 15 years) and the old-age population (65 years and above). As a country progresses through its demographic transition, the proportion of young people typically stabilizes at a lower level, while the proportion of the old-age population continues to increase. To determine the end of the demographic window of opportunity, it is necessary to identify the year when the old-age population reaches or exceeds 15 percent of Nepal's total population. This year will mark the termination of the demographic window in Nepal. Table 3.5 also presents the projected proportion of the old-age population in Nepal at five-year intervals for the period 2021-2051 based on 2021 Census data.

Nepal's termination from the demographic dividend phase has been determined using the above United Nations' operational definition. According to this definition, the window of demographic opportunity continues until the share of the old-age population remains below 15 percent of its

3 Since the 2021 Census was conducted five months later than the usual date, the time between the 2011 and 2021 censuses was 10.42 years. This extended interval is used to estimate the linear growth rate for interpolating population figures between census years.

total population. In other words, the demographic dividend is considered to end when the old-age population exceeds 15 percent, signifying a shift towards an ageing population which may increase the dependency burden on the working-age population.

Based on the projected data for Nepal's old-age population, the country is expected to exit the demographic dividend phase by 2051. In 2021, the old-age population comprised 6.9 percent of the total population, well below the 15 percent threshold. This proportion is projected to gradually increase, reaching 7.8 percent by 2026, 8.8 percent by 2031, and 10.1 percent by 2036. The old-age population is expected to reach 11.3 percent by 2041 and 12.9 percent by 2046; that is to say still within the demographic dividend phase.

However, by 2051, the proportion of old-age population in Nepal is projected to hit 15.2 percent, marking the point at which the country will exit the demographic dividend phase. Beyond this point, the ageing population is expected to grow further. This shift will bring significant challenges, as the proportion of old-age population exceeds the 15 percent threshold, signalling an increased dependency ratio and a reduced window for leveraging the benefits of a youthful population.

The implications of this transition are profound. As Nepal exits the demographic dividend phase, the economic and social systems will need to adapt to a higher proportion of old-age citizens. This may necessitate increased investment in healthcare, social security, and pension systems, as well as policies that support the ageing population while ensuring sustainable economic growth. The country must prepare for the challenges of an ageing society, including potential labour shortages, increased healthcare costs, and the need for intergenerational support systems.

According to the UN's definition, Nepal entered the demographic dividend phase in 2019. This is based on the decline in the proportion of the population under 15 years to below 30 percent, while the proportion of the old-age population (65 years and above) remained under 15 percent. This shift in age structure aligns with the UN's criteria for the demographic dividend. Additionally, it also indicates that the demographic window of opportunity will terminate by 2051 in Nepal. Therefore, according to this criterion, Nepal entered the demographic dividend phase in 2019 and is expected to leave by 2051 based on population projection using 2021 Census data.

The proportion of child dependents in Nepal was below 30 percent (27.8%) in 2021 with relatively little higher among males compared to females (29.7% for males and 26.1% for females), but the gender variation is only 3.6 percentage points (Figure 3.5). It is lower in urban municipalities (26.8%), urban areas (24.2%), Hill zone (25.4%), Bagmati Province (22.1%) and the highest wealth quintile (21.5%). It is below 30 percent in most of geographic regions only recently in 2021, except Madhesh, Karnali and Sudurpashchim provinces, and the lowest wealth quintile population (Table 3.4 and Figure 3.10). It was more than 30 percent in 2011 in both categories of urban-rural municipality; peri-urban and rural areas; all ecological belts; Koshi, Gandaki and Lumbini provinces; and among all wealth quintiles except the highest. However, it is shown to be lowering in all geographic regions over the years (2011-2021) (Table 3.4 and Annexs 1-3).

Figure 3.8: Ten districts with the lowest and the highest percentage of child dependents, Nepal, 2021

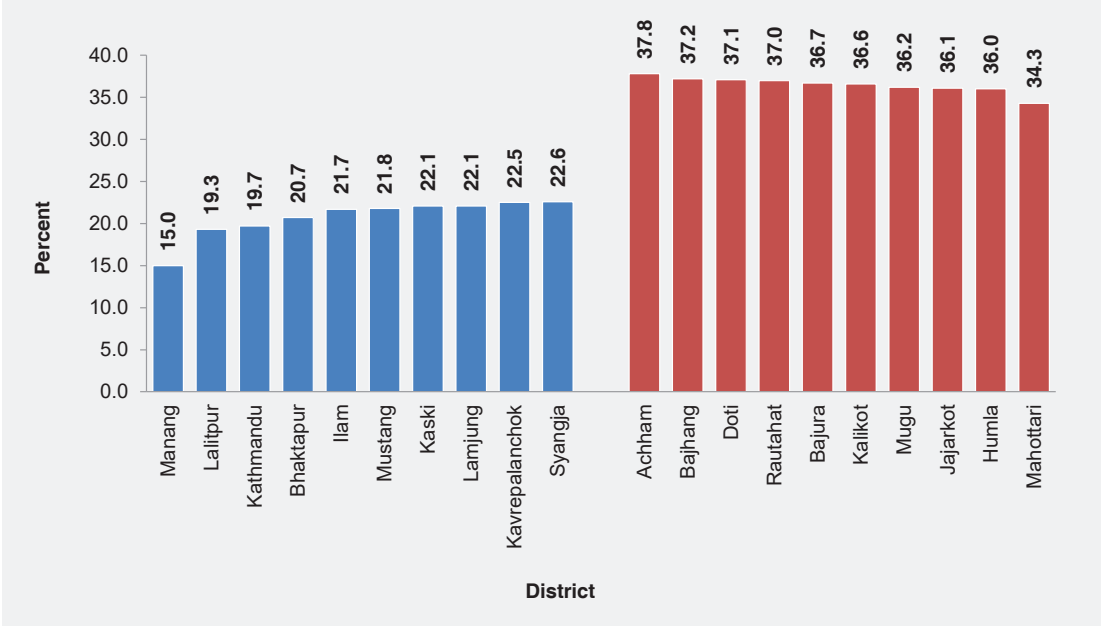


Figure 3.9: Ten districts with the lowest and the highest percentage of old-age population, Nepal, 2021

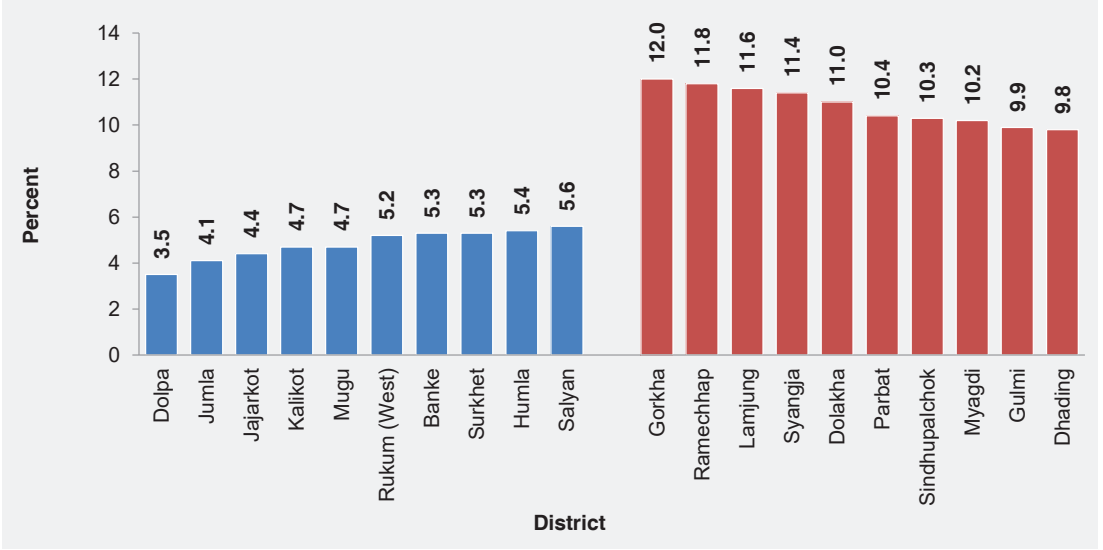
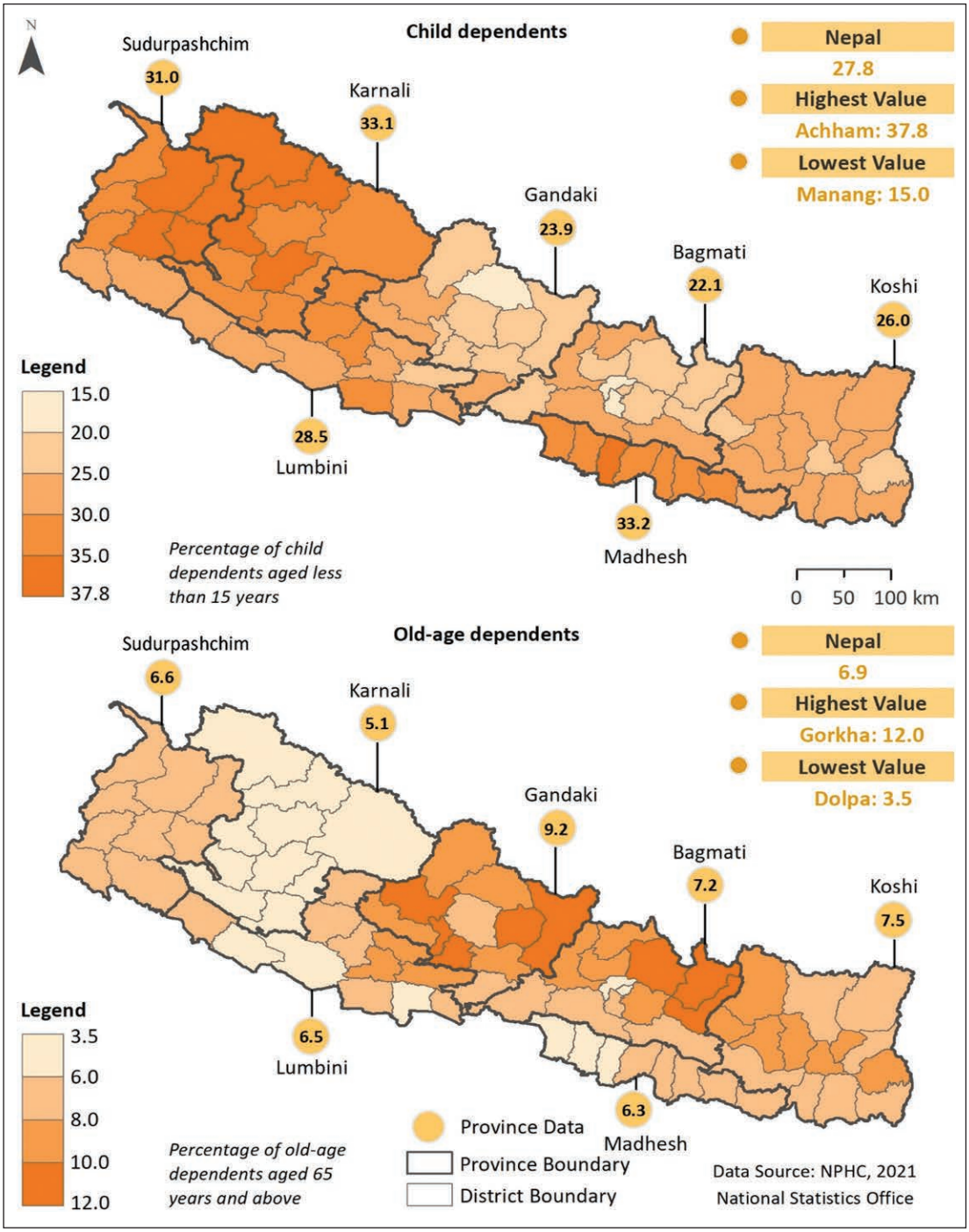


Figure 3.10: The percentage of child dependents and old-age dependents by province and district, Nepal, 2021



Among the districts in 2021 data, the lowest proportion of child dependents was also found in Manang with 15.0 percent, followed by Lalitpur (19.3%), Kathmandu (19.7%), Bhaktapur (20.7%), Ilam (21.7%), Mustang (21.8%), Kaski (21.2%), Lamjung (22.1%), Kavrepalanchok (22.5%) and Syangja (22.6%) (Figure 3.8). The highest proportion of child dependents was seen in Achham (37.8%), Jajarkot (37.2%), Kalikot (37.1%), Mugu (37.0%), Rautahat (36.7%), Doti (36.6%), Bajhang (36.2%), Humla (36.1%), Bajura (36.0) and Dailekh (34.3%). Most of the ten districts with a higher share of working-age population have a lower proportion of child dependents (8 out of 10). On the other hand, nine out of ten districts with lowest share of working-age population have highest proportion of child dependents. Furthermore, in this case, there are no large differences across the ten districts with lowest and highest proportion of working child dependents during 2011-2021 (Annexs 1-2).

Even in 2021, the proportion of old-age population (65 and above) is shown to be well below 15 percent (6.9%), with almost same level for both the sexes (6.9% for males and 7.0% for females), therefore depicting no gender variation (Figure 3.5). This rate is under 15 percent in all geographic regions of Nepal. Comparatively, the rate was much lower in the past, however its proportion has increased in all the geographic regions over the years (2011-2021) and in the population of all wealth quintiles. With the exception of Madhesh, Karnali and Sudurpashchim provinces and the lowest wealth quintile population, all other geographic regions of Nepal and population of all wealth quintiles show the combination of both data below 30 percent of child dependents and under 15 percent of old-age population in 2021 (Figure 3.10).

3.5.3 Growth rates of overall and working-age population criterion

An alternative definition, proposed by Bloom and Williamson (1998), focuses on the relative growth rates of different age groups. They suggest that a country experiences a demographic dividend when the growth rate of the working-age population surpasses that of the total population and that this difference must be both positive and increasing. The onset and progression of Nepal's demographic dividend phase can be analyzed according to this definition.

The concept of demographic dividend, as defined by Bloom and Williamson, occurs when the growth rate of the working-age population surpasses that of the total population, with this difference being both positive and increasing. Applying this definition to Nepal's demographic data reveals a clear transition point and subsequent trends.

Table 3.6 shows that Nepal's total population growth consistently outpaced the growth of its working-age population from 1952/54 to 1991. This pattern changed significantly in the 1991-2001 period, marking a crucial turning point in Nepal's demographic transition. During this decade, the growth rate of the working-age population (2.67%) exceeded the total population growth rate (2.25%) for the first time. This shift signifies the onset of Nepal's demographic dividend phase, as per Bloom and Williamson's criteria.

Table 3.6: Growth rates of working-age and total population (1952-2021)

Year	Working-age (15-64)	Overall (all ages)
1952/54-1961	1.36	1.67
1961-1971	1.53	1.75
1971-1981	2.83	2.92
1981-1991	1.84	2.08
1991-2001	2.67	2.25
2001-2011	1.93	1.35
2011-2021	1.75	0.92

Source: Analysis based on census data using exponential annual growth model.

The demographic dividend conditions further solidified in the subsequent decade (2001-2011). Not only did the working-age population growth (1.93%) continue to surpass the total population growth (1.35%), but the gap between these rates also widened. This increasing difference aligns with Bloom and Williamson's stipulation that the gap should be both positive and growing, indicating a strengthening of Nepal's demographic dividend potential during this period.

The most recent data (2011-2021) shows a continuation of the demographic dividend conditions, with the working-age population growth (1.75%) still exceeding the total population growth (0.92%). However, it is noteworthy that the difference between these rates narrowed slightly compared to the previous decade. While this does not negate the presence of a demographic dividend, it might suggest a maturing of Nepal's demographic transition or the beginning of a new phase in its population dynamics.

Based on Bloom and Williamson's definition and the available data, Nepal appears to have entered its demographic dividend phase in the 1991-2001 period. This phase strengthened in the following decade and has continued into the 2011-2021 period, albeit with signs of potential stabilisation. However, the termination phase of the demographic dividend cannot be determined based on this definition. It is crucial to assert that, while these demographic conditions create the potential for economic growth, realizing the potential depends on various socio-economic factors and policy decisions that can effectively leverage the growing working-age population.

Bloom and Williamson define the demographic dividend by the growth rate of the working-age population surpassing that of the total population. In Nepal, this occurred during the 1991-2001 period. The trend continued with an increasing gap in the decade-long period of 2001-2011, indicating a strengthening of the demographic dividend phase. The most recent decade period (2011-2021) also

shows a continuation, though with a slightly narrowed gap, suggesting maturation of the demographic transition. However, this phase terminates according to this criterion by 2034 based on population projections made based 2021 Census data. According to this criterion, Nepal entered the demographic dividend phase in 1991-2001, with continued strengthening in subsequent decades, and can be expected to terminate the phase by 2034, as based on population projections using 2021 Census data.

The average annual population growth rate of Nepal during 2011-2021 was 0.92 percent – 0.99 percent for males and 0.85 percent for females – with males registering at 0.14 percentage points higher compared to females (Figure 3.5). According to this data, the gender variation cannot be considered as large. The population growth rate is showing a rate of decline compared to previous decades. The lower growth rates of the population was noticed in rural municipality (0.11%), Mountain (-0.05%), Gandaki Province (0.25%) and the lowest wealth quintile population (0.38%) (Figure 3.13). Among the districts, the rate was negative in 34 out of 77 districts and more than minus one percent in 11 districts. The lowest population growth was found in Ramechhap (-1.67%) followed by Khotang (-1.56%), Manang (-1.39%), Bhojpur (-1.38%), Tehrathum (-1.30%), Syangja (-1.28%) Gulmi (-1.23%), Achham (-1.13%), Parbat (-1.09%) and Arghakhanchi (-1.05) districts. On the other hand, the highest growth rates were observed in Bhaktapur (3.35%), Rupandehi (2.33%), Chitawan (2.07%), Jhapa (1.97%), Banke (1.97%), Dang (1.92%), Kaski (1.90%), Sunsari (1.86%), Nawalparasi (East) (1.85%) and Kapilbastu (1.70%) districts (Figure 3.11).

Figure 3.11: Ten districts with the lowest and the highest growth rates of population, Nepal, 2021

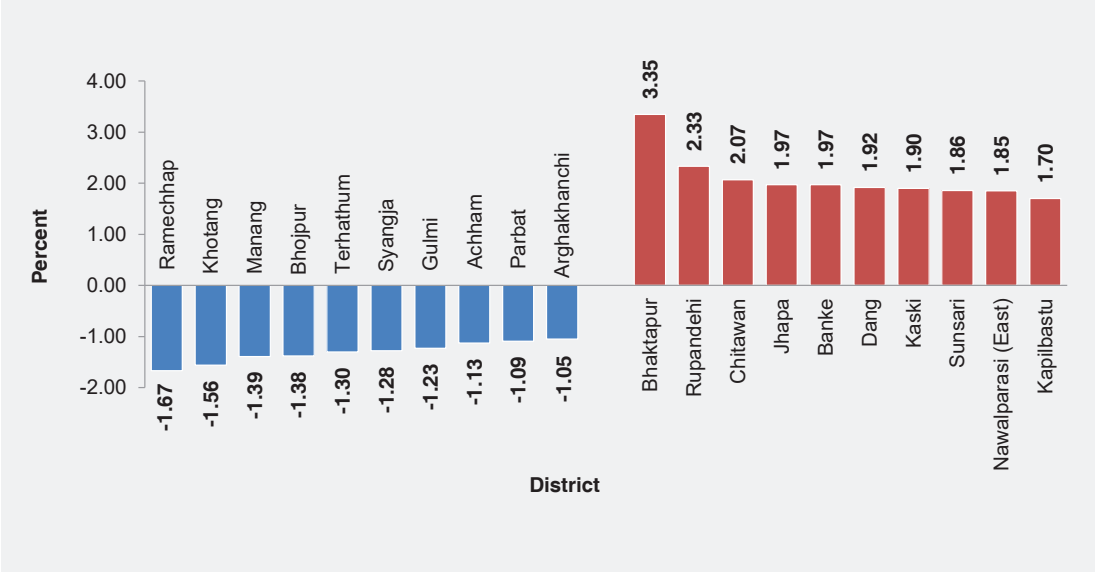


Figure 3.12: Ten districts with the highest and the lowest growth rates of working-age population, Nepal, 2021

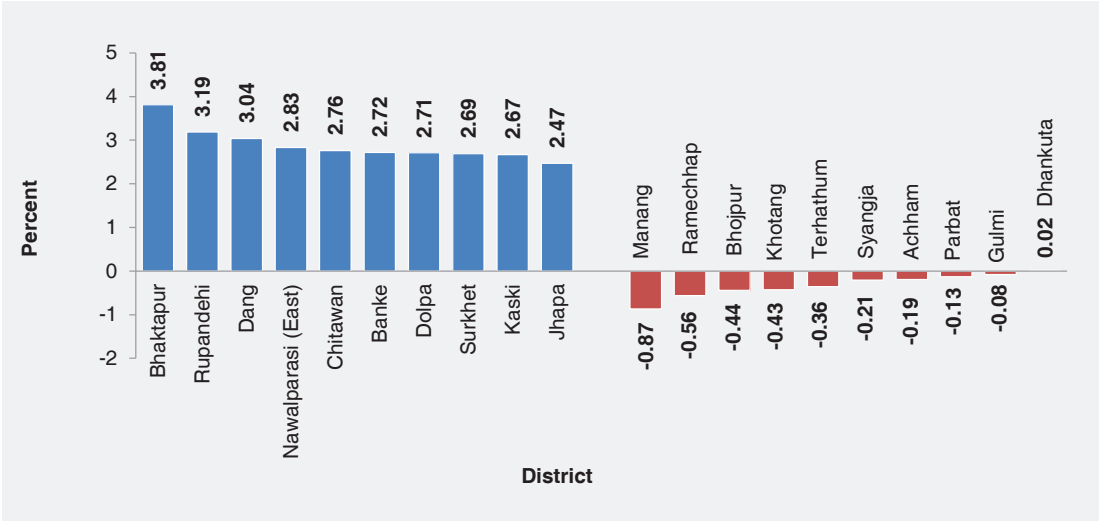
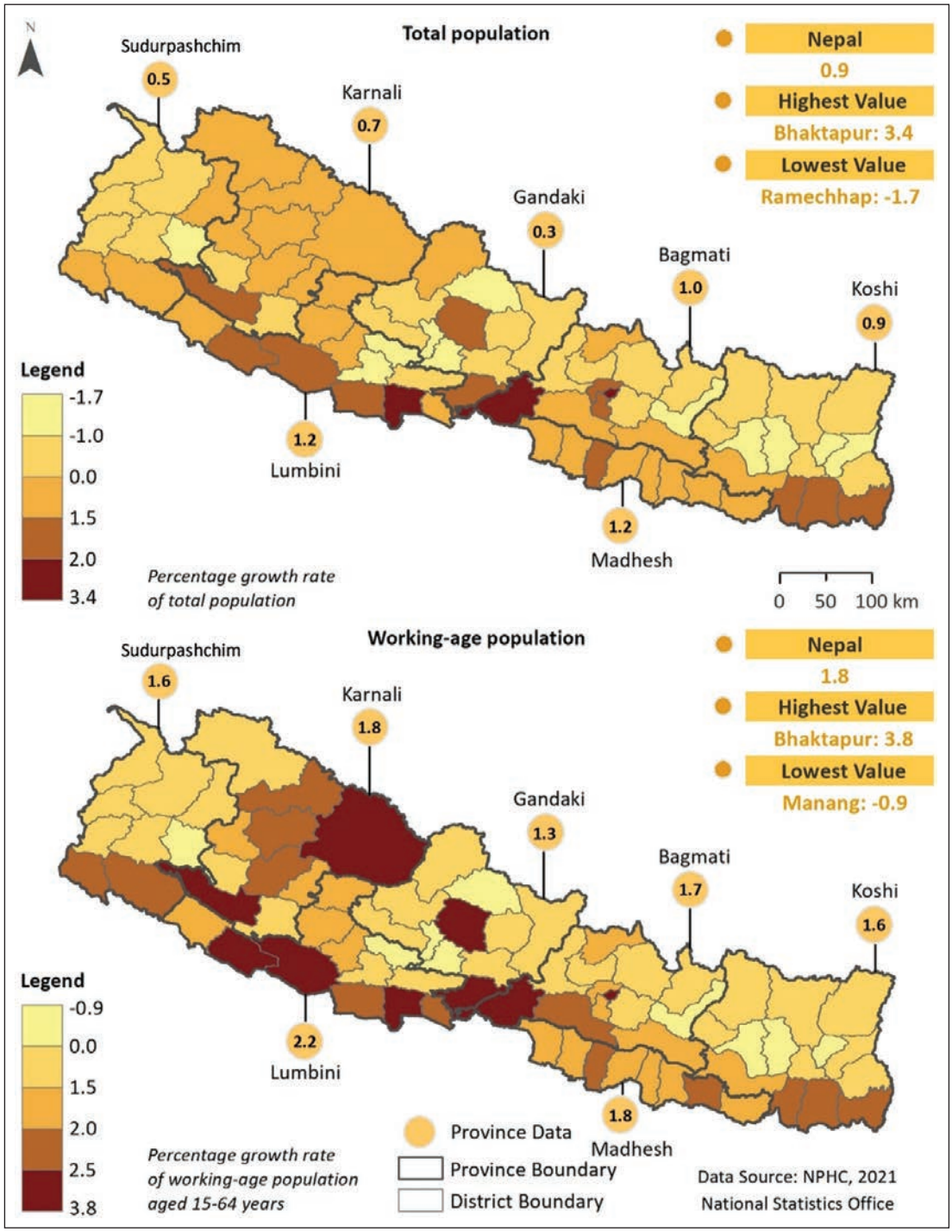


Figure 3.13: Growth rates of overall and working-age population, Nepal, 2021



On the other hand, the average annual growth rate of Nepal's working-age population during 2011-2021 was 1.75 percent (1.88% for males and 1.64% for females) with a 0.24 percentage points increase among males compared to females (Figure 3.5). The gender variation appears to be somewhat higher compared to that of overall population, yet the difference is not great. The growth rate of the working-age population is higher than the population growth rate, and it was higher in urban municipality (2.09%), Tarai zone (2.26%), Lumbini Province (2.23%) and the lower wealth quintile population (2.23%). The growth rate of the working-age population is higher than that of overall population in all the geographic regions of Nepal (Figure 3.13) and in 48 out of 77 districts, with the highest growth of working-age population seen in Bhaktapur (3.81%), Rupandehi (3.19%), Dang (3.04%), Nawalparasi (East) (2.83%), Chitawan (2.76%), Banke (2.72%), Dolpa (2.71%), Surkhet (2.69%), Kaski (2.67%) and Jhapa (2.47%). Likewise, the lowest growth rates of the working-age population were found in Manang (-0.87%), Ramechhap (-0.56%), Bhojpur (-0.44%), Khotang (-0.43%), Tehrathum (-0.36%), Syangja (-0.21%), Achham (-0.19%), Parbat (-0.13%), Gulmi (-0.08%) and Dhankuta (0.02%) districts (Figure 3.12). Most of the districts with lowest growth rates of population were also observed with lowest growth rates of working-age population and a similar kind of relationship was seen between districts with highest growth rates of population and working-age population.

3.5.4 Growth rates of working-age population and child dependents criterion

According to the Gates Institute, the demographic dividend occurs when the growth rate of the working-age population exceeds that of the child dependents. Nepal met this criterion starting in the 1991-2001 period, with the gap widening in subsequent decades. By 2011-2021, the child dependents experienced a negative growth rate, further solidifying the demographic dividend phase. However, it is not clear when this phase terminates based on this criterion.

Through this categorization, the demographic dividend occurs when the working-age population (15-64) grows faster than the young population (0-14) (Gates Institute, Johns Hopkins Bloomberg School of Public Health, n.d.).

Table 3.7: Growth rates of working-age population and child dependents in different census years

Year	Working-age (15-64)	Child dependent (<15)
1952/54-1961	1.36	2.11
1961-1971	1.53	2.01
1971-1981	2.83	3.00
1981-1991	1.84	2.33
1991-2001	2.67	1.50
2001-2011	1.93	0.15
2011-2021	1.75	-1.25

Source: Analysis based on census data.

Based on the definition provided by the Gates Institute at Johns Hopkins Bloomberg School of Public Health and the data presented in the table, it is possible to analyze the onset and progression of Nepal's demographic dividend phase. According to this definition, the demographic dividend occurs when the working-age population grows faster than the young population (pre-working-age). This perspective focuses on the changing balance between the productive workforce and the younger population that depends on it.

Examining the data from 1952/54 to 1991, Nepal's young-age population consistently grew at a faster rate than its working-age population. This pattern is typical of countries in the early stages of demographic transition, characterized by high fertility rates and a large proportion of young population. However, a significant shift occurred in the 1991-2001 period, marking a crucial turning point in Nepal's demographic structure. During this decade, the growth rate of the working-age population (2.67%) substantially exceeded the growth rate of the pre-working-age population (1.50%) for the first time (Table 3.7). This reversal signifies the onset of Nepal's demographic dividend phase, according to the Gates Institute's definition.

The demographic dividend conditions intensified dramatically in the subsequent decade (2001-2011). The working-age population continued to grow at a robust rate of 1.93 percent, while the growth of the pre-working-age population slowed significantly to just 0.15 percent. This widening gap between the growth rates indicates a strengthening of Nepal's demographic dividend potential during this period.

The most recent data (2011-2021) shows an even more pronounced demographic shift. While the working-age population maintained a healthy growth rate of 1.75 percent, the pre-working-age population actually declined, with a negative growth rate of -1.25 percent. This stark contrast not only confirms the continuation of Nepal's demographic dividend phase but also suggests a rapid ageing at the base of the population pyramid.

This trend of a growing working-age population, coupled with a shrinking young population, creates a potentially favourable dependency ratio. It means that there are more working-age individuals to support fewer young population, which can lead to an increase in per capita income and savings, potentially driving economic growth.

However, it's crucial to note that while these demographic conditions create the potential for economic growth, realizing this potential depends on various factors. These include investments in human capital, creation of productive employment opportunities, good governance, and sound economic policies that can effectively leverage the growing working-age population.

Based on the Gates Institute's definition and the available data, Nepal appears to have entered its demographic dividend phase in the 1991-2001 period. This phase has intensified in subsequent decades, with an increasingly favourable ratio between working-age and young population growth rates. As Nepal progresses through this demographic transition, it faces both opportunities for accelerated economic growth and challenges in adapting to a rapidly changing population structure. However, it is not clear when this phase terminates based on this criterion. According to this criterion, Nepal entered the demographic dividend phase in 1991-2001, with intensified conditions in the following decades. However, based on population projection using 2021 Census data, it will continue beyond 2051 as projection data beyond 2051 are not available.

The average annual growth rate of young population in Nepal during 2011-2021 was negative at -1.25 percent (-1.04% for males and -1.48% for females) with a 0.44 percentage points increase among males compared to females (Figure 3.5). The gender variation appears to register as higher than that for other population groups, which may be due to the results of practicing sex selective birth in recent past. The growth rate of young population is lower in rural municipality (-2.14%), Mountain zone (-2.36%), Gandaki Province (-2.71%) and the lowest wealth quintile population (-1.87%). The growth rate of the working-age population is higher than that of young population in all the geographic regions of Nepal and the wealth quintile of the population (Table 3.4 and Figure 3.14); that is to say that the former is growing faster than the latter. Among the districts, growth rate of working-age population was higher than that of young population in 67 out of 77 districts with the lowest growth rates of latter in Ramechhap (-5.30%), Manang (-4.91%), Syangja (-4.80%), Khotang (-4.34%), Lamjung (-4.19%), Gulmi (-4.11%), Dolakha (-4.09%), Parbat (-3.97%), Gorkha (-3.97%) and Okhaldhunga (-3.95%). The highest growth rates of young population were observed in Bhaktapur (1.61%), Rautahat (0.68%), Mustang (0.43%), Dhanusha (0.36%), Banke (0.20%), Kapilbastu (0.17%), Rupandehi (0.15%), and Jhapa (0.14%), Mugu (0.09%) and Sunsari (0.09%) districts (Figure 3.15). Most of the districts with the lowest population growth were also observed with lowest growth rates of young population, and a similar kind of relationship was seen between districts with highest growth rates of population and young population.

Figure 3.14: Growth rates of child dependents and working-age population, Nepal, 2021

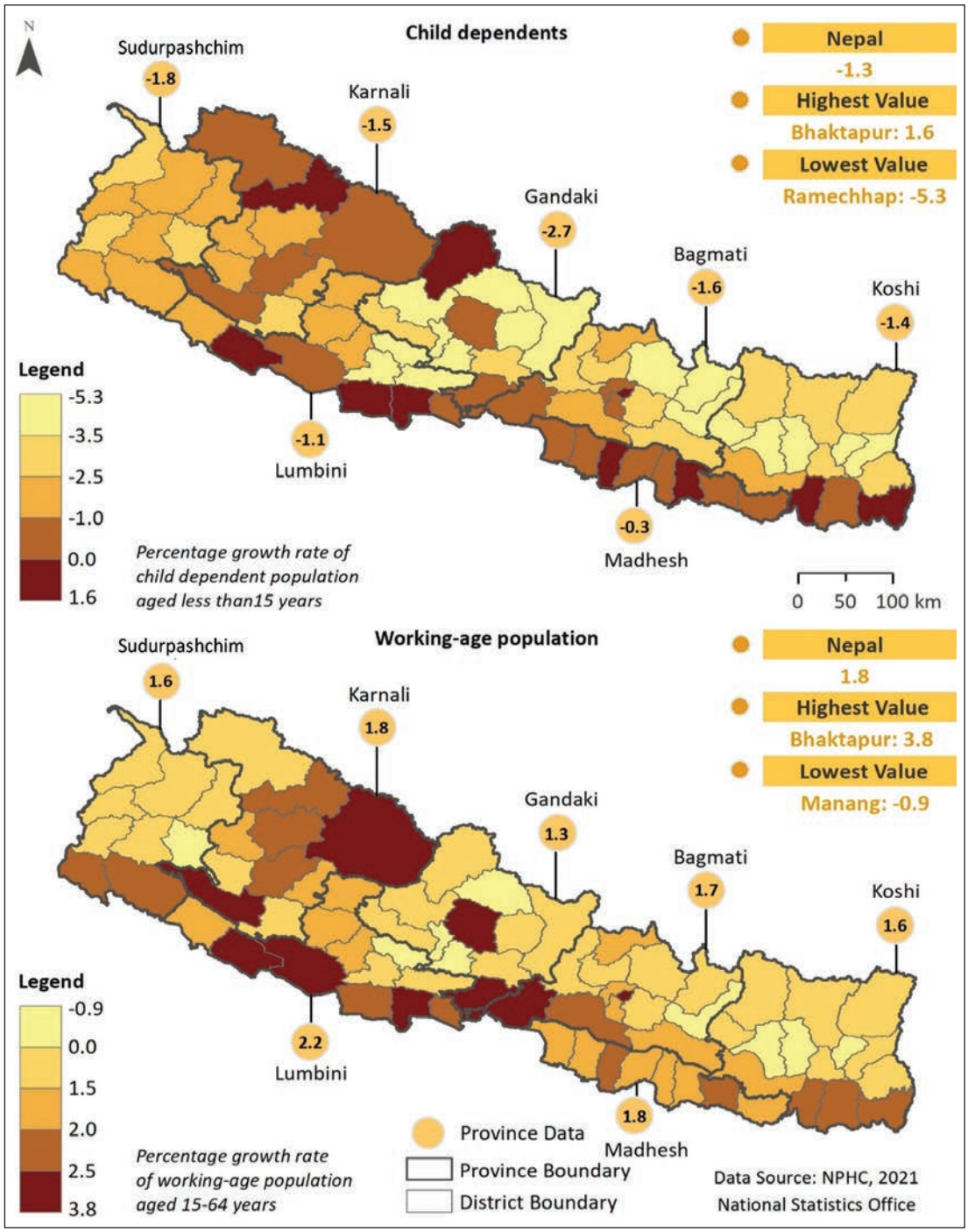
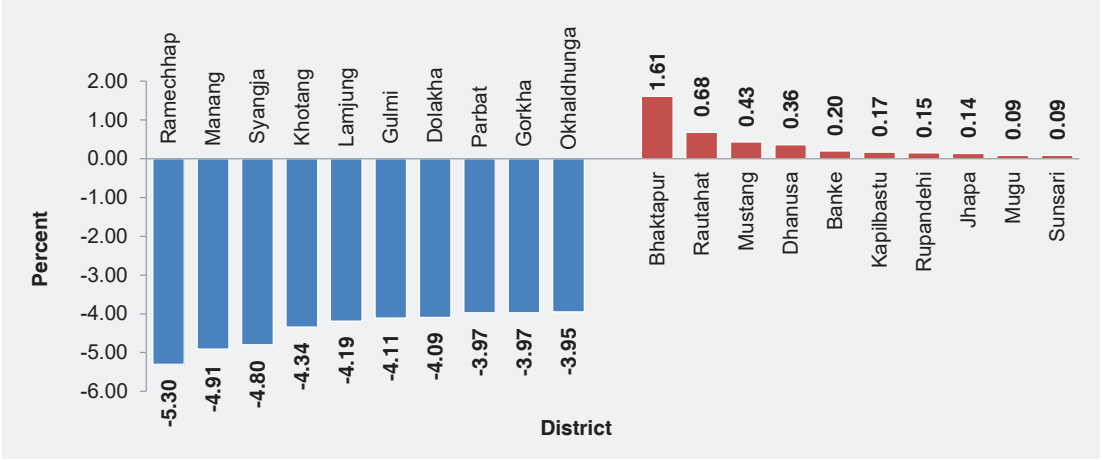


Figure 3.15: Ten districts with the lowest and the highest growth rates of child dependents, Nepal, 2021



3.5.5 Dependency ratio criterion

The window of opportunity is considered to occur when the dependency ratio is around 60 dependents (<15 plus 65 and above) for every 100 working-age population (15-64) (NPC, 2017). Nepal's total dependency ratio has undergone significant changes from 1952/54 to 2021, providing valuable insights into the country's demographic transition and the onset of its demographic dividend phase (Table 3.8). The ratio initially showed an upward trend, increasing from 70.8 in 1952/54 to a peak of 84.8 in 1991. This rise indicated a growing number of dependents relative to the working-age population during this period.

Table 3.8: Dependency ratio over the years (1952/54-2021)

Year	Dependency ratio	Year[4]	Dependency ratio*
1952/54	70.8	2011	67.2
1961	75.0	2012	65.9
1971	78.8	2013	64.5
1981	80.5	2014	63.2
1991	84.8	2015	61.9
2001	77.2	2016	60.5
2011	67.2	**2017**	**59.2**
2021	53.3	2018	57.9
		2019	56.5
		2020	55.2
		2021	53.3

*Sources: Analysis based on censuses data; *Linear interpolation based on 2011 and 2021 Census data.*

4 Since the 2021 Census was conducted five months later than the usual date, the time between the 2011 and 2021 Censuses was 10.42 years. This extended interval is used to estimate the linear growth rate for interpolating population figures between census years.

The year 1991 marked a crucial turning point in Nepal's demographic landscape. After reaching its total dependency ratio peak of 84.8, a sharp and consistent decline followed. This downward trend continued over the next three decades, with the ratio falling to 77.2 in 2001, 67.2 in 2011, and further dropping to 53.3 by 2021. This substantial decrease represents a reduction of 37.1 percent in the total dependency ratio over this 30-year period.

The rapid decline in the total dependency ratio post-1991 clearly signals the beginning of Nepal's demographic dividend phase. This demographic shift has resulted in a more favourable population structure, with a growing proportion of working-age individuals relative to dependents. By 2021, there were approximately 53 dependents for every 100 working-age individuals, which marks a significant improvement from the 85 dependents per 100 working-age people in 1991.

The onset of Nepal's demographic dividend can be more precisely identified using the yearly dependency ratio data from 2011 to 2021. Table 3.8 shows a consistent decline in the dependency ratio throughout this period, starting from 67.2 in 2011. The ratio fell below 60 in 2017, reaching 59.6. According to the definition used by NPC (2017), the dependency ratio 60 is considered a benchmark for entering the demographic dividend phase, representing a point where there are fewer than 60 dependents for every 100 working-age individuals.

This change indicates a potentially favourable shift in the age structure of Nepal's population, with a higher proportion of working-age individuals relative to dependents. According to the analysis, Nepal reached a significant demographic milestone in 2017 when its dependency ratio dropped to 59.6, falling below the critical threshold of 60 for the first time. This pivotal shift marks the onset of Nepal's demographic dividend period, a potentially transformative phase in the country's economic development. This trend suggests that Nepal has entered a period that could be conducive to accelerated economic growth, provided that appropriate policies are implemented to capitalize on this demographic advantage. However, it is not clear when Nepal will exit this phase based on this criterion.

The window for Nepal to benefit from this demographic dividend began in 2017 and is likely to continue for several years, offering an opportunity for enhanced economic development if managed effectively. Specifically, the ratio was estimated to be 60.3 at the beginning of 2016 and 58.9 by the start of 2017. This milestone marks a significant point in Nepal's demographic transition, indicating the country's entry into a period of potentially increased economic productivity due to a more favourable ratio of working-age population to dependents. This transition presents both opportunities and challenges for Nepal's socioeconomic development, requiring careful policy planning to maximize the benefits of this demographic shift.

The period from 1991 to 2021 represents a crucial window for policy action. To fully leverage this demographic advantage, Nepal must implement effective policies and make strategic investments in education, skills development, and economic infrastructure. It is important to note that this favourable demographic trend may not continue indefinitely, as population ageing could eventually lead to an increase in the old-age dependency ratio.

The analysis of Nepal's total dependency ratio from 1952/54 to 2021 provides strong evidence of the country's progression through its demographic transition. The data supports the identification of the year 2017 as the onset of Nepal's demographic dividend phase. This demographic shift offers a valuable yet time-bound opportunity for accelerated economic growth and development. However, based on this criterion, it is not clear when this phase will terminate. Urgent and effective action is needed to translate this demographic potential into tangible economic benefits for the nation.

The NPC defines the demographic dividend window as having a dependency ratio of about 60 dependents per 100 working-age adults. Nepal reached this milestone in 2017, with the dependency ratio continuing to decline, reaching 53.3 by 2021. This indicates a favourable shift in age structure, providing an opportunity for economic growth if effectively managed. However, it is not clear when this phase terminates based on this criterion. According to this criterion, Nepal entered the demographic dividend phase in 2017, with a favourable dependency ratio continuing to improve. According to this criterion, and based on population projections using 2021 Census data, it will continue beyond 2051. This is due to the fact that projection data beyond 2051 are not available.

Overall, various criteria suggest that Nepal's demographic dividend phase began sometime between the early 1990s and 2017, depending on the various definitions applied. Notably, the UN definition provides a clear indication that Nepal will exit the demographic dividend phase with 2051 identified as the likely exit year. Based on the criterion of growth rates of overall and working-age population, the likely exit year is 2034. The demographic dividend is expected to continue beyond 2051 based on both criteria of growth rates of working-age population and child dependents, and the total (child plus old-age) dependency ratio. This analysis underscores the importance of the next two decades as a critical period for Nepal to implement policies that can effectively capitalize on its demographic dividend, driving sustained economic growth and development.

The overall dependency ratio in Nepal was more than 60.0, even in 2011, and reached below 60 (i.e., 53.3 dependents or non-working per 100 working-age population) only recently in 2021. It is 57.6 for males and 49.4 for females, with 7.2 more dependents among males compared to females (Figure 3.5). The gender variation in this case can also be attributed to the sex selective births practice in recent times. It was lower in urban municipality (50.2), urban area (43.1), Hill (49.0), Bagmati Province (41.5) and the highest wealth quintile (39.9). It is below 60 in most of the geographic regions except in Madhesh, Karnali and Sudurpashchim provinces, and the lowest wealth quintile population (Figure

3.16). However, it has also decreased in all the geographic regions of Nepal over the years (2011-2021), with a slightly remarkable decline in the areas with a now low dependency ratio (Table 3.4 and Annexs 1-3). The lowering dependency ratio may have contributed to achieving the situation of demographic dividend for economic growth of the nation.

The lowest dependency was also found in Manang district (32.6) in 2021, followed by Kathmandu (33.9), Lalitpur (35.3), Bhaktapur (36.2), Kaski (41.7), Ilam (43.2), Mustang (43.5), Chitawan (44.0), Kavrepalanchok (44.9) and Makwanpur (47.7) (Figure 3.17). The higher dependency ratio was observed in Achham (81.4), Bajhang (75.3), Doti (74.8), Rautahat (74.1), Bajura (73.3), Kalikot (72.0), Mugu (71.6), Jajarkot (71.1), Humla (70.9) and Mahottari (67.9) districts. The majority of the ten districts with lower dependency ratio also have a lower proportion of young dependents (8 out of 10). On the other hand, nine out of ten districts with the higher dependency ratio have also higher proportion of young population.

Figure 3.16: Dependency ratio by province and district, Nepal, 2021

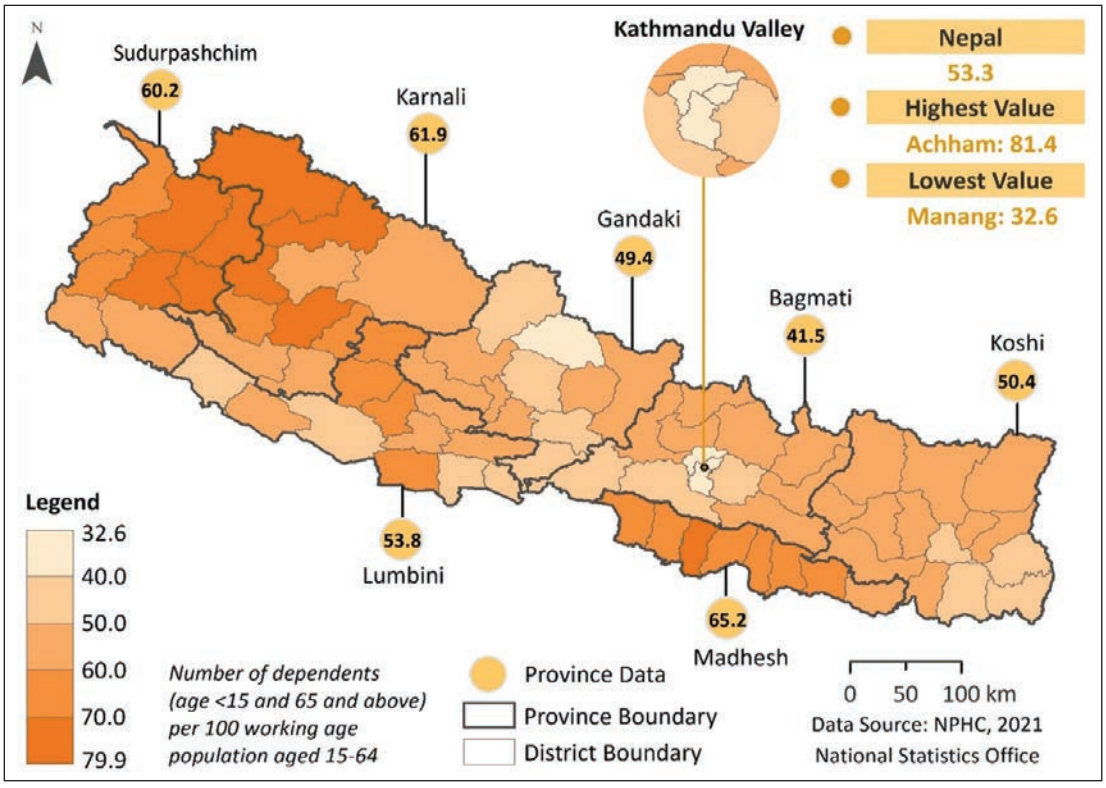
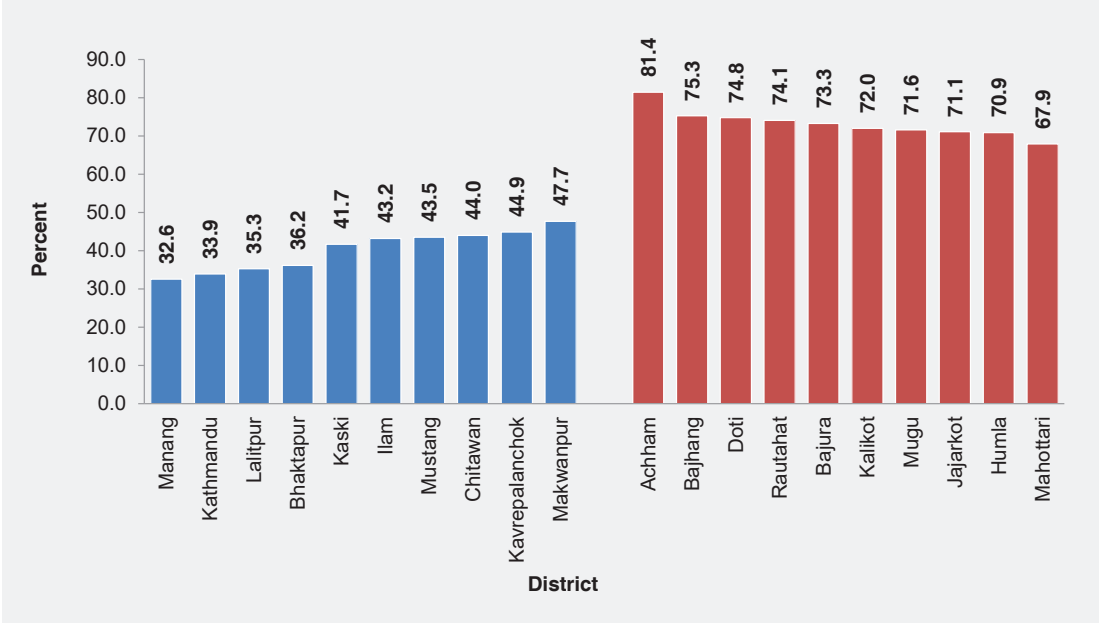


Figure 3.17: Ten districts with the lowest and the highest dependency ratio, Nepal, 2021



3.6 Discussion on demographic dividend situations of Nepal

The demographic dividend is defined as the economic growth potential that can result from shifts in a population's age structure. Using 2021 Census data, and based on different criteria of age composition of population, various measures of demographic dividend show different situations of demographic dividend in the past and its likely future courses (via population projection) in Nepal. According to the share of the working-age population being larger than the non-working-age share of the population, Nepal has consistently had a larger share of working-age population since 1952/54 and no explicit cut off year can be determined, even with the use of population projection data up to 2051. Likewise, criterion based on proportion of children under 15 year falling below 30 percent and the share of old-age population remaining under 15 percent, Nepal entered the demographic dividend phase only in 2019 and is expected to exit by 2051. Based on the growth rate of the working-age population surpasses that of the total population criterion, Nepal entered the demographic dividend phase in 1991-2001, with continued strengthening in subsequent decades, and terminates the phase by 2034. Similarly, according to the working-age population growing faster than the young population, the country entered the demographic dividend phase in 1991-2001 with intensified conditions in the following decades and it will continue beyond 2051. Finally, based on the dependency ratio of about 60 dependents for every 100 working-age population, Nepal entered the demographic dividend phase only in 2017, with a favourable dependency ratio continuing to improve and it will continue beyond 2051.

Therefore, based on the various methods of measuring demographic dividends adopted in this report and available literatures in relation to demographic dividends of Nepal, it can be concluded that the utmost window of opportunity period for economic development of the country as a result of shift in age structure of population would be 50-55 years, ranging between the entering stage of demographic dividend during 1991-2001 and exiting around or beyond 2051 as based on population projections data.

If the situation of demographic dividend is examined by gender in Nepal, its situation among males and females are almost similar with no great gender variation as there are not many differences between the two sexes in various measures of demographic dividends such as the shares of working-age population, child dependents and old-age population; the growth rates of overall population, working-age population and child dependents, with the exception of a somewhat relatively higher dependency ratio among males than that of females. However the gender gap in the dependency ratio is also found to decline in 2021 from that in 2011 (Annex 3).

The demographic dividend situation of Nepal measured from different modules is also compared with some selected countries from different continents using comparable data published by United Nations Population Division, Population Reference Bureau and CIA World Factbook across the years 2020-2024, and in the case of growth rates for the period 2011-2021. The share of working-age population of Nepal is higher than that of most of the South Asian and Arab countries, except for Afghanistan, Pakistan and Iraq. It is higher than that of China and South Korea yet lower compared to Japan, Australia and most of the European, Northern American and African countries (Annex 4).

Similarly, the share of Nepal's child and old-age dependents are nearly at the same levels to that of India, Sri Lanka and Bangladesh and for most of the African nations. However, the share of child dependents is higher than that of Bhutan, Maldives, China, Japan, South Korea, Australia and most of the Arab, European and Northern and South American countries but lower than that of Pakistan, Afghanistan and Iraq. On the other hand, the share of old-age population is higher than that of Pakistan, Maldives, Afghanistan and most of the Arab and African counties except Iran and Morocco. But it is lower than that of Sri Lanka, China, Japan, South Korea, Australia and almost all European and Northern and South American nations.

The situation of Nepal's higher growth rate of working-age population over total population is almost similar to that of most of South Asian, Arab, South American and African countries, except Sri Lanka and Pakistan, but the situation is opposite in China, Japan, South Korea, Australia and most of European and Northern American countries except Germany. Likewise, the situation of Nepal's higher growth rate of working-age population over child dependents is universal all over the world.

The overall dependency ratio of Nepal is nearly at the same levels to that of most of the South Asian, European and Northern and South American countries and Australia, but it is higher than that of Maldives, China, South Korea and most of the Arab countries, and lower than that of Afghanistan, Iraq, Japan and most of the African countries.

In addition, the demographic dividend situations of Nepal in relation to dependency ratio, which is an important measure of the demographic dividend, are analyzed over the period 1980-2050 and comparison has been made with some selected countries based on the comparable World Bank data which further includes its own projections (Annex 5). Based on the dependency ratio of World Bank data, as well as data observed from censuses, Nepal entered into its window of opportunity or demographic dividend stage only recently after 2010 and before 2024 or 2021. The projected data from both the sources of World Bank and 2021 Census data indicate that it will continue to be in that stage beyond 2050/51, as onward projected data are not available.

The dependency ratio indicates that Nepal entered in demographic dividend at a later stage compared to other South Asian countries like India, Sri Lanka, Bhutan and Bangladesh, but will remain for longer time period, as opposed to Sri Lanka which will exit by 2050. The late entry in demographic dividend stage may be because of slow fertility decline in the country which, on other hand, may widen the period of window of opportunity as a result of slow shift in age structure of population. The comparable data of World Bank also reveal that Nepal will exit from its demographic dividend stage only after India and Bhutan. Other Asian countries such as Japan already left the demographic dividend stage before 2024, and China and South Korea will exit before 2050. The data also show that window period of opportunity is shorter in these countries compared to expected period of Nepal. However, Arab countries like the UAE, Qatar, Kuwait and Saudi Arabia have prolonged demographic dividend periods of more than 70, 70, 50 and 40 years respectively until 2050 compared to Nepal and are also expected to exit the stage only after Nepal.

USA, Canada and the UK are expected to depart from their respective demographic dividend stages before 2050, however these countries experienced long periods of demographic dividend for more than 50 years. Most of the European countries and Australia are or have either already left or are on the verge of exiting from their demographic dividend. They may have spent prolonged periods under this categorization, as available data do not capture of the complete period. Countries like Brazil and Argentina entered in demographic dividend two decades earlier than Nepal and will exit shortly after 2050, with almost the same window span as expected for Nepal. Most African countries, with the exception of South Africa, Egypt and Morocco, are yet to enter in the demographic dividend stage.

CHAPTER 4

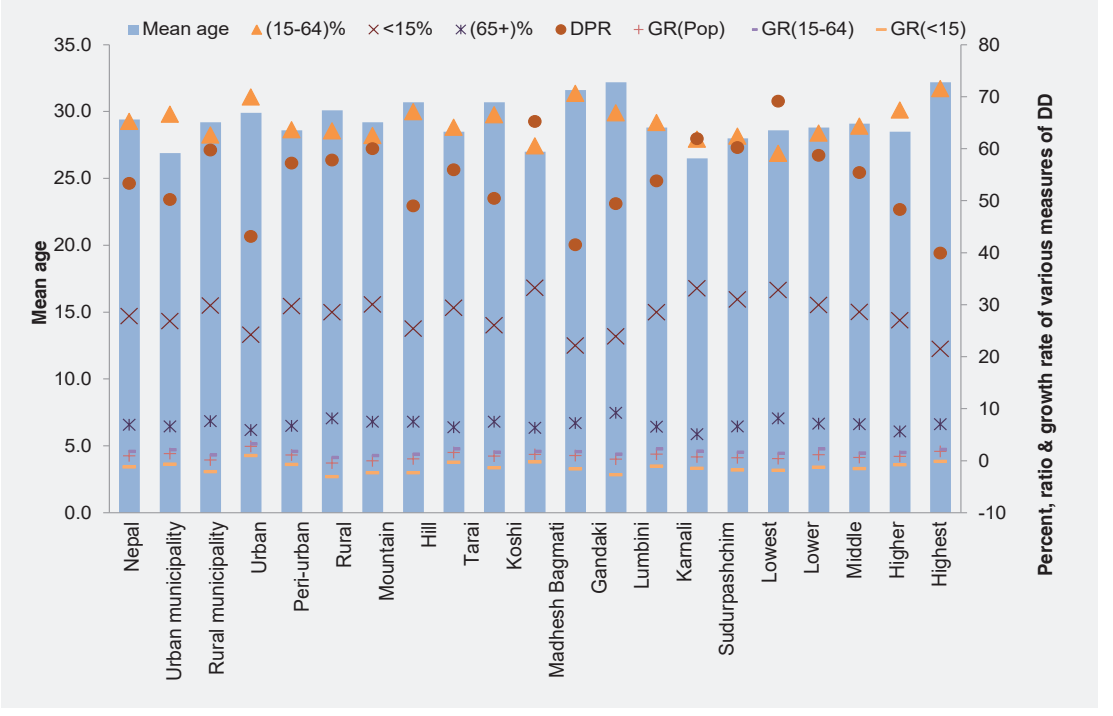
COMPONENTS OF POPULATION CHANGE AND DEMOGRAPHIC DIVIDEND

The association between major components of population change, such as birth, death and migration, along with mean age at first marriage, and mean and median ages of population and demographic dividend, are addressed in this section.

4.1 Mean and median age of population

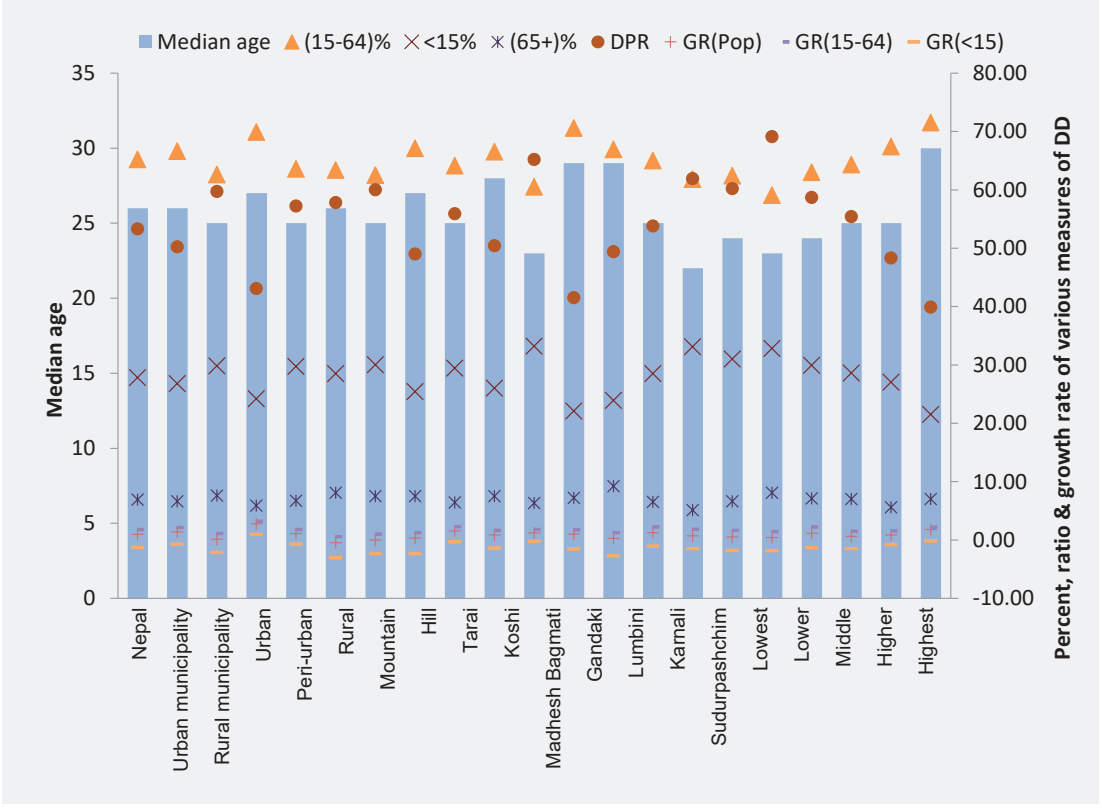
The mean and median ages of Nepal's population were 29.4 and 26 years respectively in 2021, which increased from 26.3 and 22 respectively in 2011. The figures have increased gradually over the years, with the exception of mean age of population in urban municipality during 2011-2021. This is mainly due to the re-classification of boundaries of urban municipality during the period, which declined from 27.2 to 26.9 years. The mean age of population was higher in rural municipality (29.2), rural area (30.1), Hill (30.7), Gandaki Province (32.3) and the highest wealth quintile population (32.2) in 2021 (Figure 4.1).

Figure 4.1: Mean age of population and different measures of demographic dividend by geographic regions of Nepal and wealth quintile, Nepal, 2021



Likewise, the median age of population was higher in urban municipality (26), urban area (27), Hill (27), Bagmati and Gandaki provinces (29 each) and the highest wealth quintile population (30) in 2021 (Figure 4.2). The figures show some association between higher mean and median age of population and higher share of working-age population in urban area (urban municipality also in the case of median age); Hill; Koshi, Bagmati and Gandaki provinces; and wealth index of the highest quintile population. Similarly, these are the areas or groups with lower proportions of child dependents, as well as lower dependency ratios. The higher mean and median ages of population are also found to be associated with a lower proportion of old-age population in urban municipality (in the case of median age); urban area; Koshi and Bagmati provinces; and the highest wealth quintile population. However, other measures of demographic dividends such as the growth rate of working-age population surpassing that of overall population and child dependents prevails in all areas or groups irrespective of differentials in mean and median ages of population. Thus, there may have some association between higher mean and median ages of population and the demographic dividend or demographic window of opportunity for economic development.

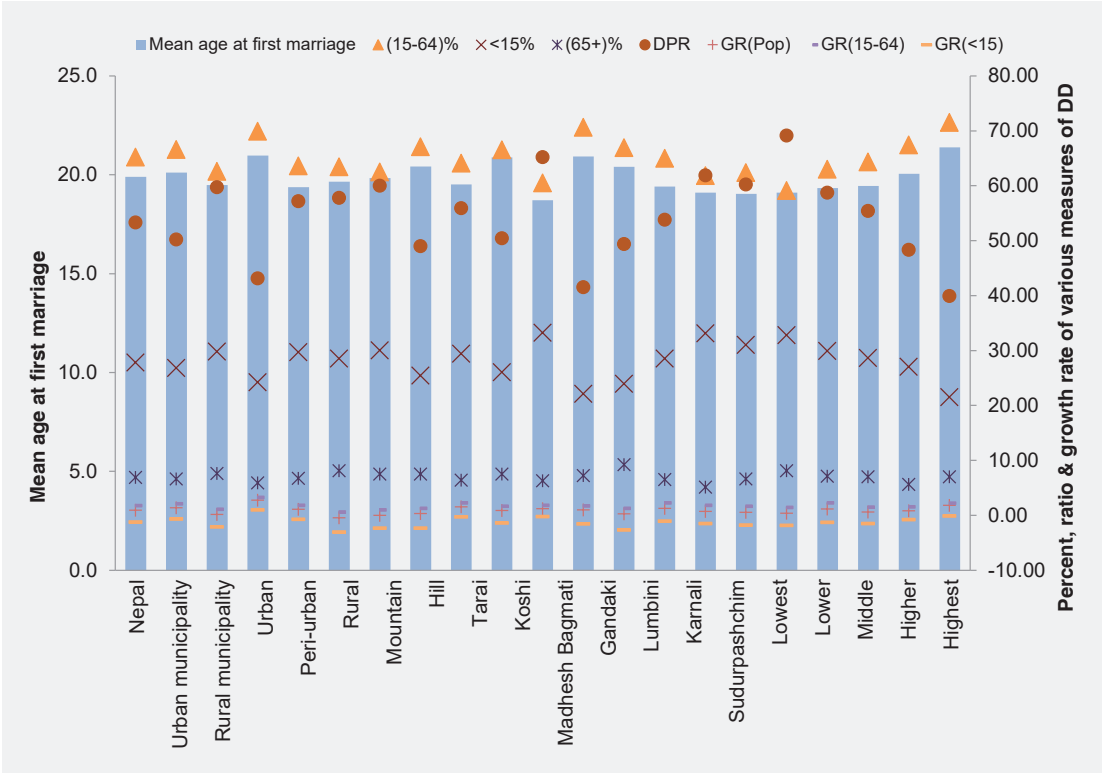
Figure 4.2: Median age of population and different measures of demographic dividend by geographic regions of Nepal and wealth quintile, Nepal, 2021



4.2 Mean age at first marriage

The mean age at first marriage for both sexes combined in Nepal was 19.9 years (21.6 for males and 18.5 for females) in 2021, which increased by one year during 2011-2021. This mean age has also been increasing gradually over the years, except for males in urban municipality. The mean age at first marriage was higher in urban municipality (20.1), urban area (21.0), Hill (20.4), Bagmati Province (20.9) and the highest wealth quintile population (21.4) in 2021 (Figure 4.3). The data on age at first marriage also show that there is association between higher mean age at first marriage and higher share of working-age population in urban municipality; urban area; Hill; Koshi, Bagmati and Gandaki provinces; and wealth index of highest quintile population for both males and females (Annex 7). Similarly, like in the cases of mean and median ages of population, these are the areas or groups with lower proportions child dependents, lower dependency ratios and lower proportion of old-age population, except in Gandaki Province and the highest wealth quintile population. Therefore, there may be some association between higher mean age at first marriage and demographic dividend.

Figure 4.3: Mean age at first marriage and different measures of demographic dividend by geographic regions of Nepal and wealth quintile, Nepal, 2021



4.3 Fertility

In Nepal for the period of 1952/54-2022, the two most common measures of fertility, i.e., crude birth rate (CBR) and total fertility rate (TFR) from the various sources, are presented in Table 4.1. Fertility rates are declining in Nepal over time and 2021 Census data estimated CBR as 14 per thousand population and TFR as 1.9 per woman of reproductive ages 15-49 years. However, in 2022, both CBR and TFR are found to increase somewhat from the results of the Nepal Demographic and Health Survey. This may indicate underestimates of the rates in the census. Both measures of fertility are used relative to different measures of demographic dividend in this report for census years with combined charts of fertility rates and demographic dividend measures (Figures 4.4 and 4.5).

Table 4.1: Crude birth rate (CBR) and total fertility rate (TFR) over the years, 1952/54-2022

Year	CBR	TFR	Year	CBR	TFR
1952/54	45-50	-	2001	34	4.1
1961	47	5.7	2006	28	3.1
1971	42-43	5.8	2011	22	2.6
1976	47	6.3	2016	22	2.3
1981	40-45	5.3	2019	19	2.0
1986	39	5.1	2021	14	1.9
1991	39	4.8	2022	20	2.1
1996	37	4.6			

Sources: NSO (2024); MoHP [Nepal] et al. (2023, 2012, 2007); MoH [Nepal] et al.

Figure 4.4: Fertility (CBR) and different measures of demographic dividend, Nepal, 1961-2021

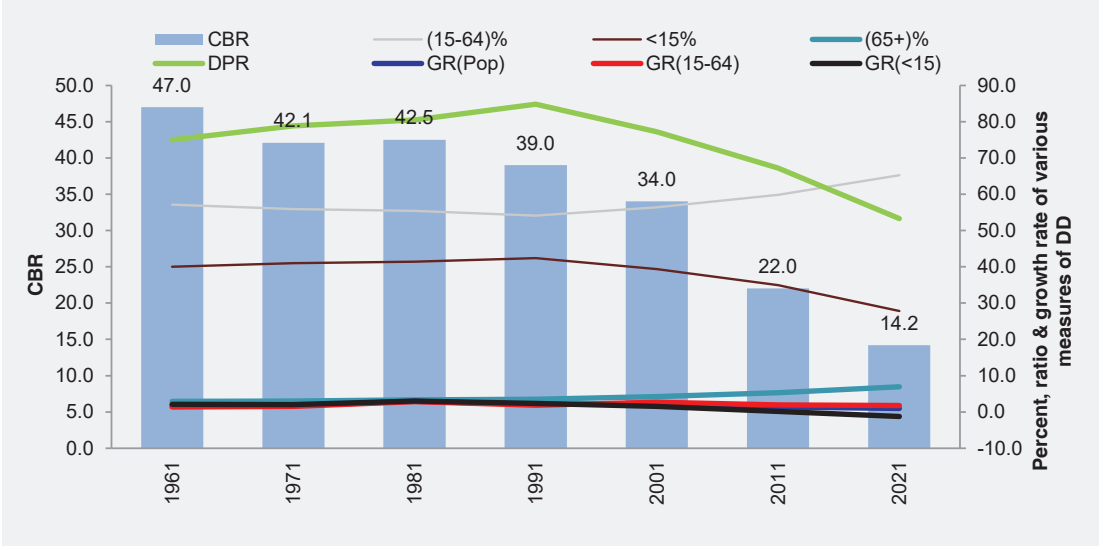
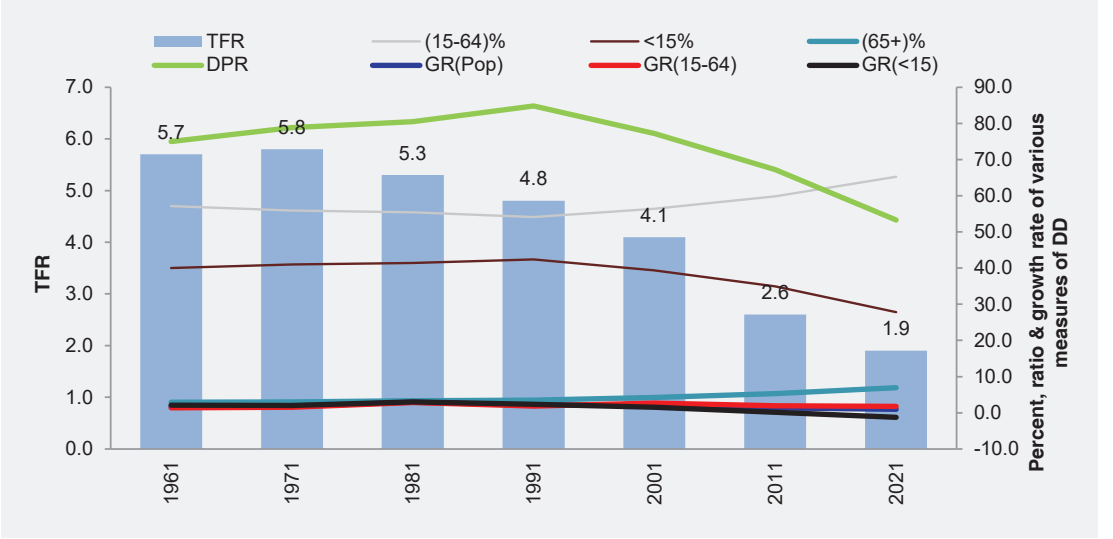


Figure 4.5: Fertility (TFR) and different measures of demographic dividend, Nepal, 1961-2021

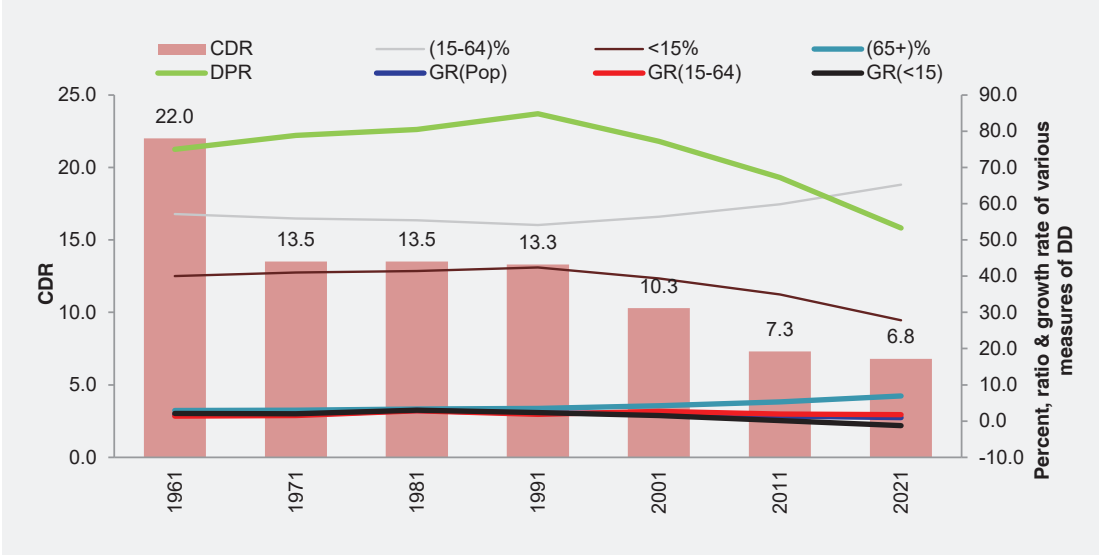


The figures show some association between declining fertility rates and higher shares of working-age population, lower proportion of child dependents and lower dependency ratio. However, a gradual increase in the proportion of the old-age population is also found with reducing fertility over time. The growth rate of the working-age population is surpassing that of overall population and child dependents in between 1991 and 2001. Thus, it can be said that there may be some association between declining fertility and the evolution of the demographic window of opportunity for economic development. It can therefore be expected that the reduced fertility on population age structure will have an impact in the future, with favourable demographic dividends.

4.4 Mortality

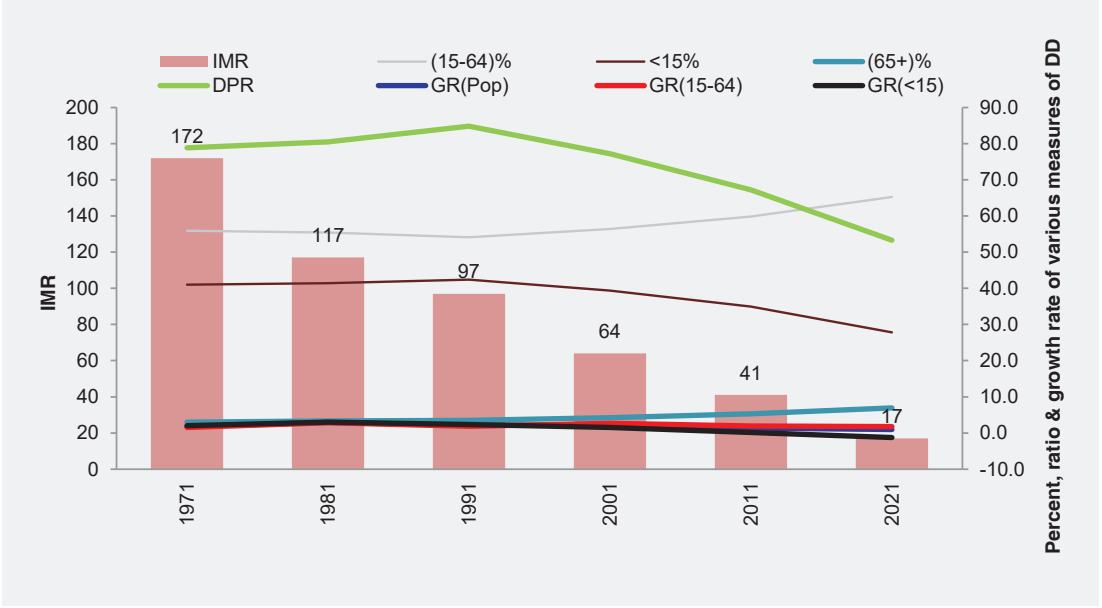
The two most common measures of mortality in Nepal for the period of 1953/61-2022, i.e., crude death rate (CDR) and infant mortality rate (IMR) , are presented in Annex 8 from the various sources. As reliable life expectancy data of Nepal for sufficiently long periods are not available, they are not used here to associate with the demographic dividend. Mortality rates also are declining in Nepal over the years. The 2021 Census data estimated CDR as 6.8 per thousand population and IMR for both sexes combined as 17 (17 for males and 15 for females) per thousand live births. Both of the measures of mortality are also related to links with different measures of demographic dividend in this report for census years with combined charts of mortality rates and demographic dividend measures (Figures 4.6 and 4.7).

Figure 4.6: Mortality (CDR) and different measures of demographic dividend, Nepal, 1961-2021



Like in the case of fertility rates, the figures show some association between declining mortality rates and higher share of working-age population, lower proportion of child dependents and a lower dependency ratio, but a gradual increase in proportion of old-age population with reducing mortality over time. Like fertility, reducing mortality, particularly infant mortality, may have some association for entering into demographic window of opportunity for economic development.

Figure 4.7: Mortality (IMR) and different measures of demographic dividend, Nepal, 1961-2021



4.5 Migration

4.5.1 Internal migration

The authors attempt to examine the association between internal migration status and demographic dividend here in this report. The findings revealed that the share of working-age population was higher by about 21 percentage points in the households of internal migrants at destination compared to non-migrants (81.5% vs. 60.6%) in 2021, and it is higher in all geographic regions of Nepal (Table 4.2). The proportion of child dependents was much lower, by more than 24 percentage points in the households of internal migrants at destination than non-migrants (8.7% vs. 33.3%), but the proportion of old-age population was found to be a little higher among the former than the latter (9.8% vs. 6.1%). Likewise, the dependency ratio was also very much lower in the households of internal migrants in destination, with 22.7 dependents per 100 working-age population in comparison to 65 of non-migrants. From these findings, it seems like Nepali internal migrant's households at destination have more demographic windows of opportunity than their non-migrant counterparts for economic development.

Table 4.2: Various measures of demographic dividend by geographic regions of Nepal according to internal migration status (inter-district level) at destination, 2021

Area	Internal migrant				Non-migrant			
	Working-age (%)	Child dependents (%)	Old-age population (%)	Dependency ratio	Working-age (%)	Child dependents (%)	Old-age population (%)	Dependency ratio
Nepal	81.5	8.7	9.8	22.7	60.6	33.3	6.1	65.0
Ecological belt								
Mountain	87.4	6.1	6.5	14.4	61.0	31.5	7.5	64.0
Hill	84.1	9.0	6.9	18.9	61.9	30.4	7.7	61.7
Tarai	78.9	8.5	12.6	26.7	59.7	35.6	4.7	67.6
Province								
Koshi	78.4	7.9	13.7	27.6	62.5	31.8	5.7	59.9
Madhesh	85.5	4.6	9.9	16.9	57.3	37.1	5.6	74.6
Bagmati	83.8	9.1	7.1	19.3	63.1	29.5	7.3	58.4
Gandaki	80.9	9.9	9.2	23.6	62.9	27.8	9.3	59.0
Lumbini	80.1	9.4	10.6	24.9	60.8	33.8	5.4	64.4
Karnali	81.4	11.4	7.1	22.9	59.9	35.1	4.9	66.9
Sudurpashchim	77.1	9.6	13.2	29.7	59.2	35.7	5.1	69.0

Source: Calculations from 2021 Census data.

Figure 4.8: Working-age population by internal migration status (inter-district level) at destination, Nepal, 2021

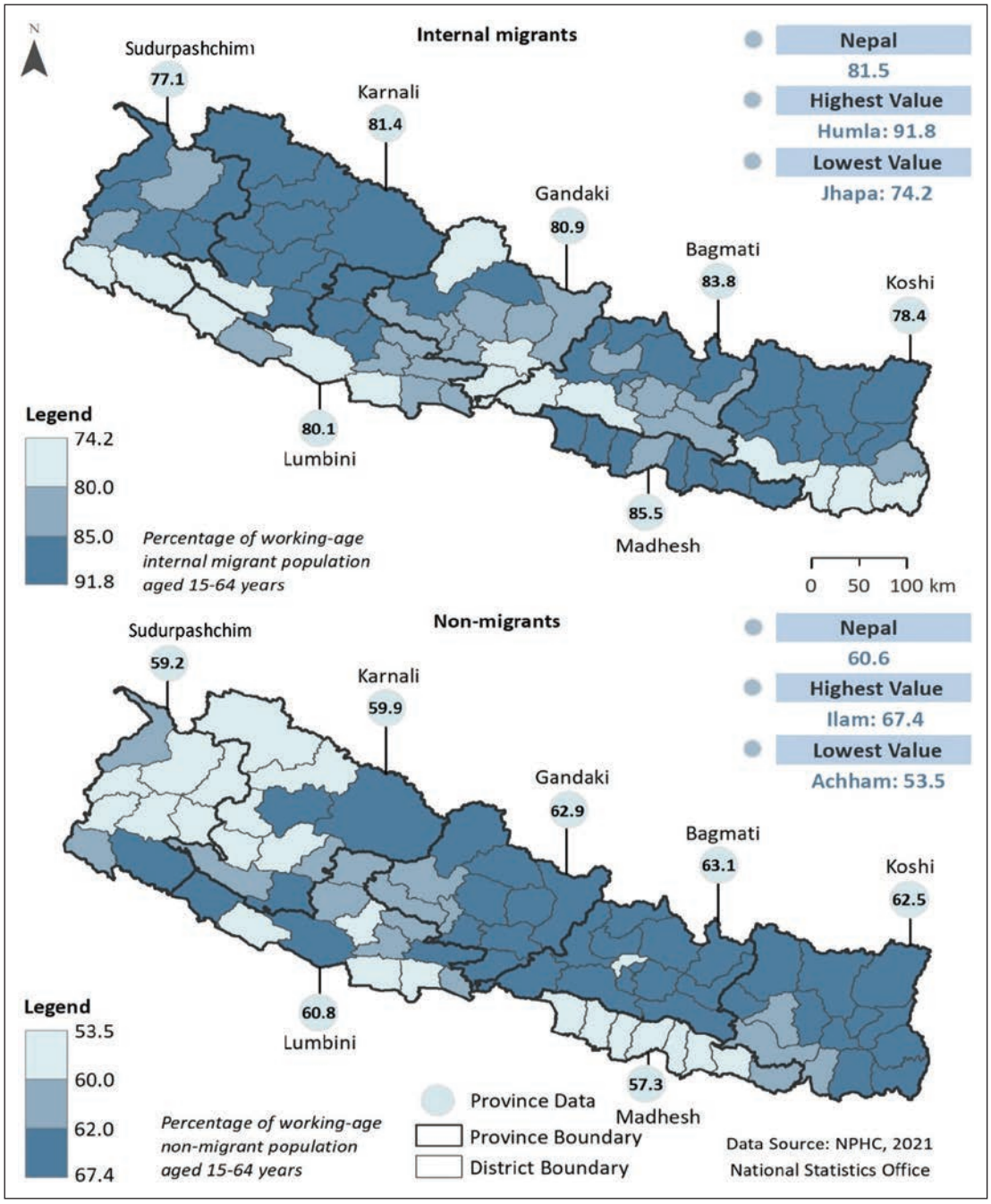


Figure 4.9: Child dependents by internal migration status (inter-district level) at destination, Nepal, 2021

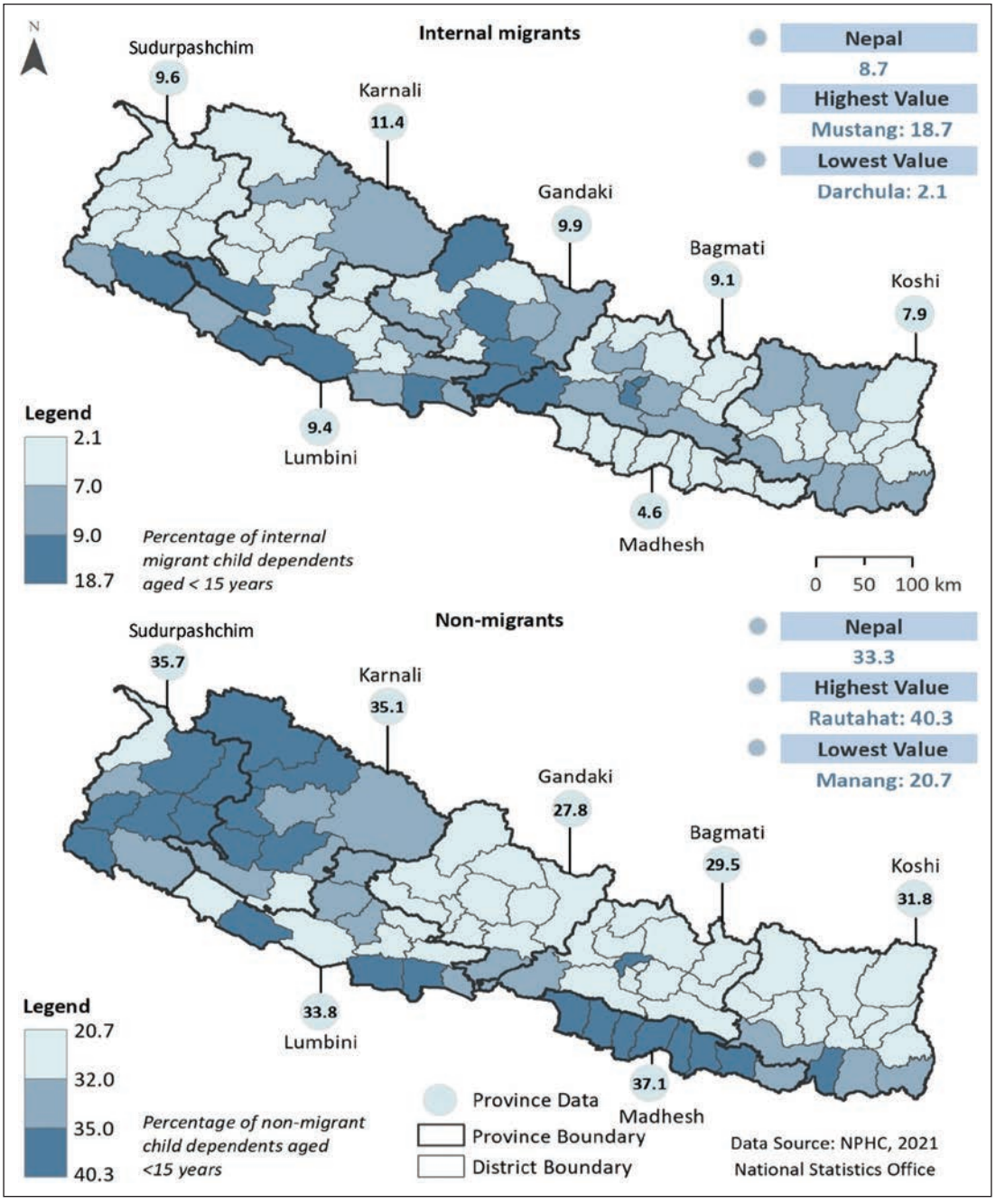


Figure 4.10: Old-age dependents by internal migration status (inter-district level) at destination, Nepal, 2021

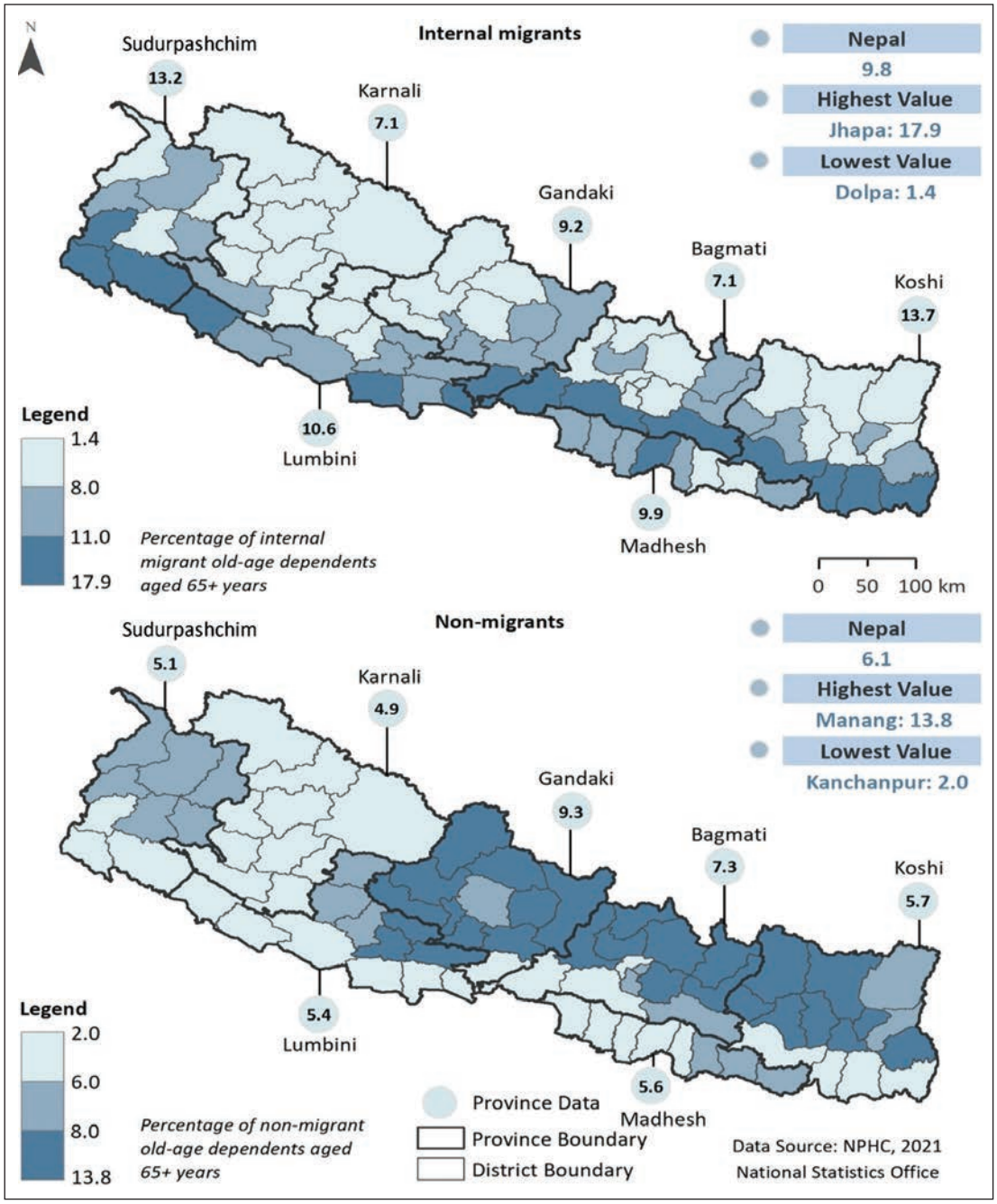
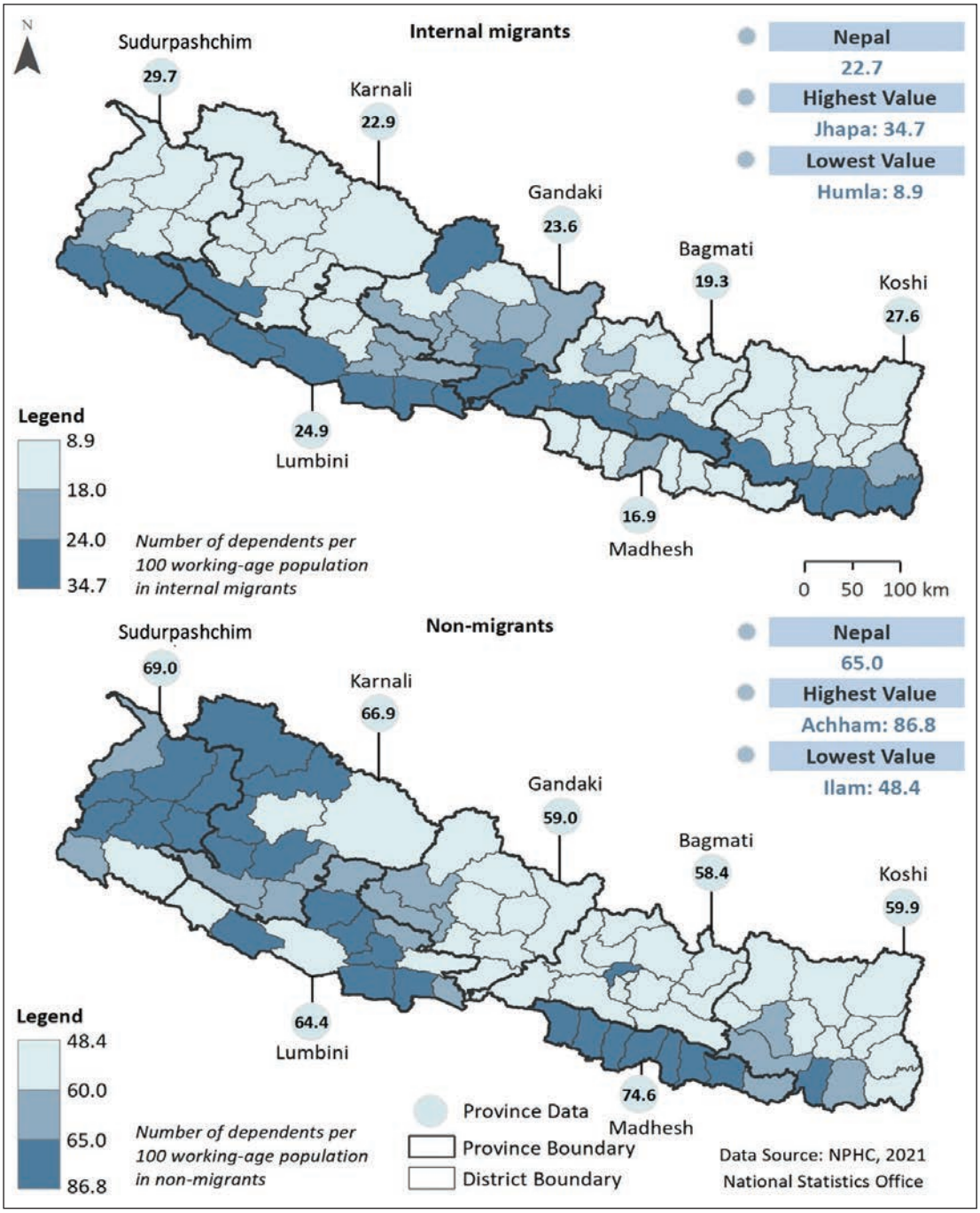


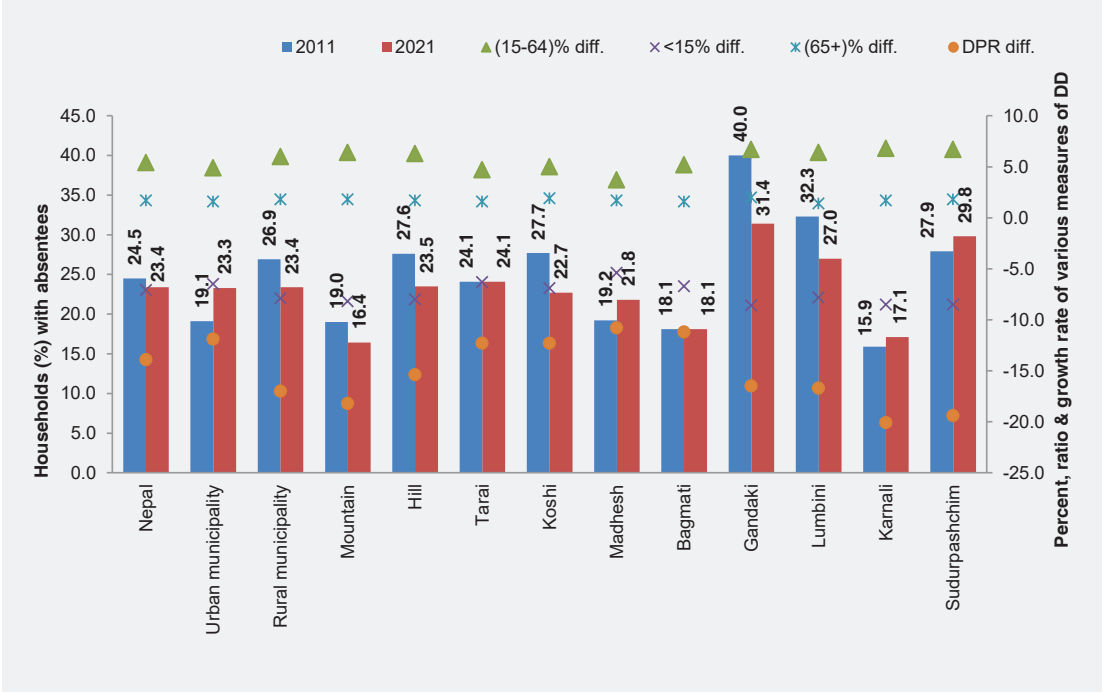
Figure 4.11: Dependency ratio by internal migration status (inter-district level) at destination, Nepal, 2021



4.5.2 Households having absentees (International migration)

An aspect of international migration, such as changes in proportion of households with absentee population is analysed with differences in demographic dividend, is measured over time to presume the demographic dividend measure itself indirectly. Figure 4.12 shows that in most of the regions, the proportion of households with absentees declined during the period 2011-2021, except in the urban municipality, Madhesh, Karnali and Sudurpashchim provinces. The regions with higher differences in the share of working-age population had seen declined proportion of households with absentees, indicating that a greater number of the working-age population are residing within the country in 2021 than in the past. The differences in proportions of child dependents and dependency ratios are negative for all the regions and higher negative differences in these two measures are also found mostly in those areas where households with absentees declined over time, except in Karnali and Sudurpashchim provinces in the case of dependency ratio. So, the declining proportion of households with an absentee population may be linked with increasing working-age population and reduced child dependents, which can help to achieving demographic widows of opportunity.

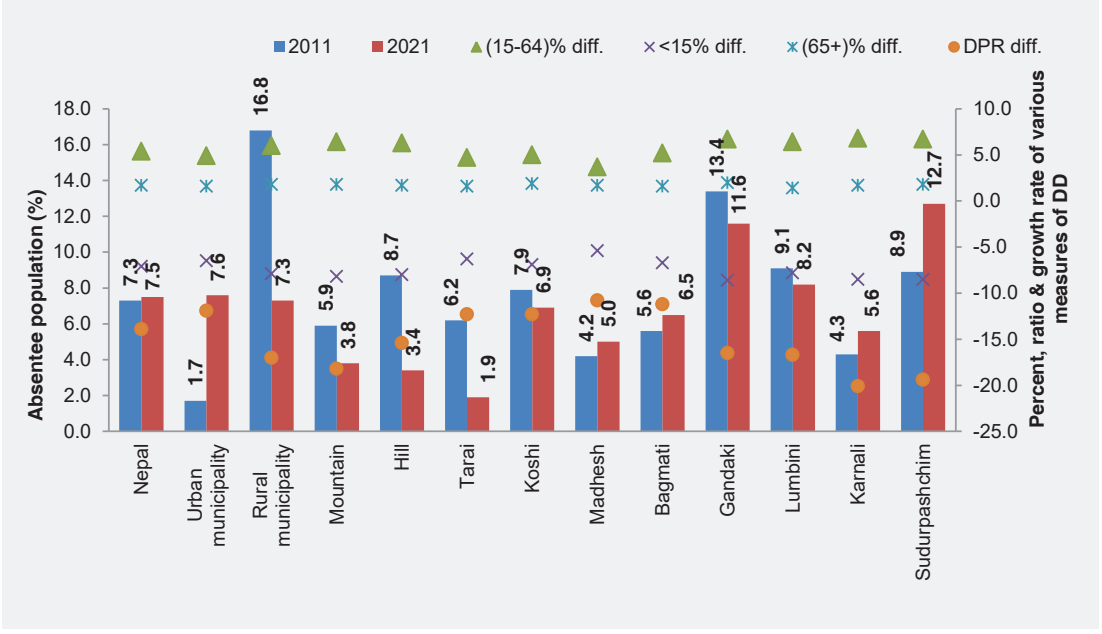
Figure 4.12: Households (in %) with absentees and differences in different measures of demographic dividend during 2011-2021 by geographic regions of Nepal



4.5.3 Absentee population (International migration)

Like in the case of changing proportions of households with absentee populations, change in the proportion of absentee population is also analysed with differences in demographic dividend measures over time. Figure 4.13 also shows that, with the exception of urban municipality, Madhesh, Bagmati, Karnali and Sudurpashchim provinces, most of the regions are experiencing the declined proportion of absentee population during the period 2011-2021. Similar to the previous case, the regions with higher differences in share of working-age population and higher negative differences in child dependents and dependency ratio had seen declined proportion of absentee population, except in Karnali and Sudurpashchim provinces in the case of dependency ratio, indicating more working-age population residing within the country. This situation of declining proportion of absentee population may help to achieving demographic widows of opportunity by increasing the working-age population and reducing child dependents.

Figure 4.13: Absentee population (in %) and differences in various measures of demographic dividend during 2011-2021 by geographic regions of Nepal



CHAPTER 5

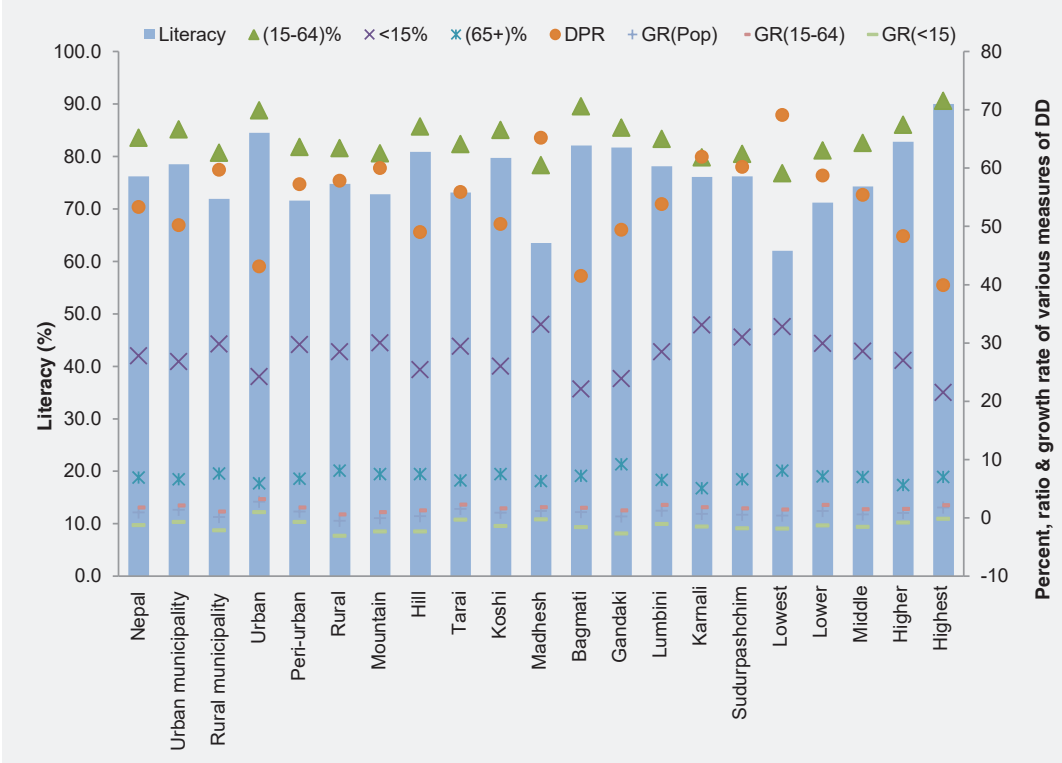
SOCIO-ECONOMIC STATUS AND DEMOGRAPHIC DIVIDEND

In this section, socio-economic status such as literacy, educational attainment and labour force participation are correlated with various measures of demographic dividend in addition to GDP per capita and gross savings with dependency ratio.

5.1 Literacy

The literacy rates of Nepal in 2021 by geographic regions are presented in Figure 5.1. The literacy rate is increasing in Nepal over time and 2021 Census data estimates the rate as 76.2 percent among population aged 5 years and above for both sexes (83.6% for males and 69.4% for females), which increased from 65.9 percent (75.1% for males and 57.4% for females) in 2011 (Table 5.1). Different measures of demographic dividend are interconnected here in this report, with combined charts of literacy rate and demographic dividend measures.

Figure 5.1: Literacy rate and different measures of demographic dividend by geographic regions of Nepal and wealth quintile, Nepal, 2021



The figure shows the associations between higher literacy rate and higher share of working-age population, lower proportion of child dependents and lower dependency ratio, and in some regions with lower proportion of old-age population too, except in Hill, Gandaki, Bagmati and Koshi provinces and the highest wealth quintile population. In these regions, a higher proportion of old-age population is found with higher literacy rates. The growth rate of working-age population is surpassing that of overall population and child dependents in all the regions of Nepal in 2021. Thus, there may have been an association between higher literacy rate and growing opportunity with shifts in the demographic window for economic development. The higher literacy rate may help fertility decline, which in turn can lower dependents and ultimately can rise demographic dividend for some periods.

Table 5.1: Literacy rate (%) by geographic regions of Nepal, 2011-2021

Area	2011			2021		
	Male	Female	Both sexes	Male	Female	Both sexes
Nepal	75.1	57.4	65.9	83.6	69.4	76.2
Urban-rural municipality						
Urban municipality	89.0	75.2	82.2	85.4	71.9	78.5
Rural municipality	72.0	53.8	62.5	79.8	64.4	71.9
Urban-rural area						
Urban	86.8	72.3	79.6	90.1	78.9	84.5
Peri-urban	68.8	50.3	59.3	79.5	64.2	71.6
Rural	74.2	56.0	64.5	82.7	67.7	74.8
Ecological belt						
Mountain	71.6	50.1	60.5	81.1	64.8	72.8
Hill	81.4	64.1	72.3	87.9	74.3	80.9
Tarai	70.3	52.4	61.2	80.5	66.1	73.1
Province						
Koshi	79.3	63.9	71.2	86.1	73.6	79.7
Madhesh	60.1	38.9	49.5	72.5	54.7	63.5
Bagmati	82.8	67.0	74.9	88.3	76.0	82.1
Gandaki	83.5	67.7	74.8	88.8	75.3	81.7
Lumbini	75.5	58.3	66.4	85.2	71.7	78.1
Karnali	72.9	53.2	62.8	83.3	69.4	76.1
Sudurpashchim	76.4	51.9	63.5	85.4	68.2	76.2
Wealth quintile						
Lowest	55.7	39.4	47.2	69.8	54.8	62.0
Lower	66.0	47.1	56.1	79.2	63.8	71.2
Middle	75.8	56.5	65.5	82.4	66.8	74.3

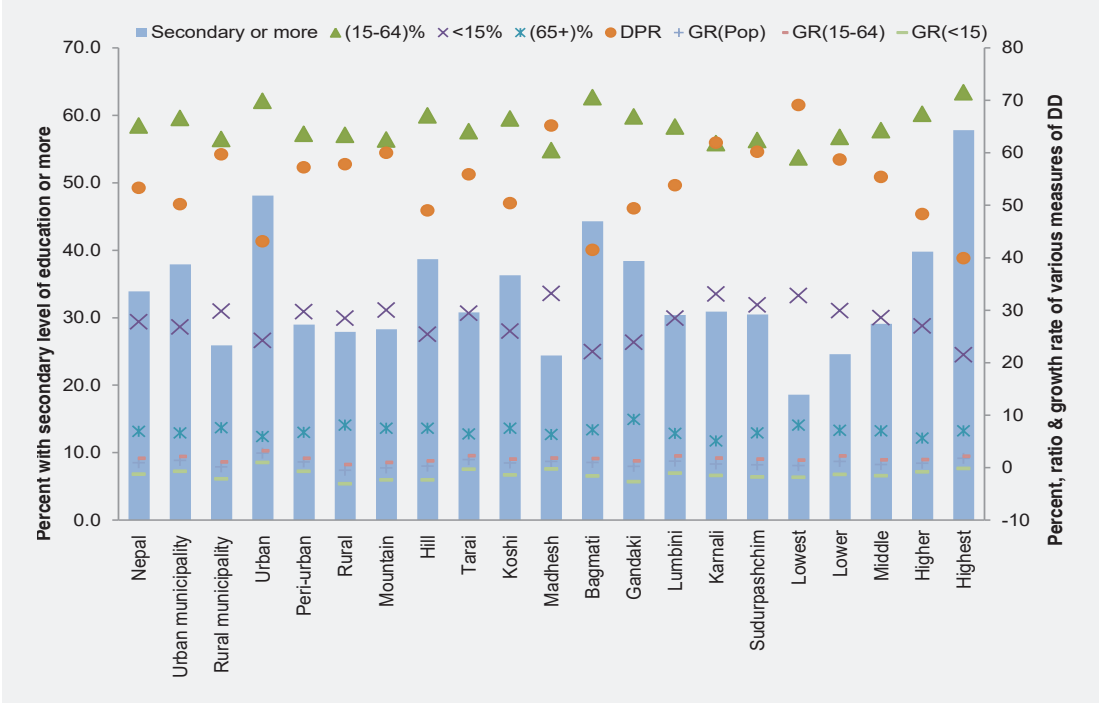
Area	2011			2021		
	Male	Female	Both sexes	Male	Female	Both sexes
Higher	83.6	64.9	73.8	89.6	76.5	82.8
Highest	94.0	80.9	87.3	95.4	84.8	90.0

Source: Calculations from 2011 and 2021 Census data.

5.2 Educational attainment

The proportion of population aged 5 years and above attaining a higher level of education is increasing over time (Annex 10). The higher proportion of population with higher level of educational attainment (i.e., secondary level or more) are interconnected more strongly with higher share of working-age population, lower proportion of child dependents and lower dependency ratio. The lower proportion of old-age population is also accompanying with higher proportion of higher educational attainment, except in Hill and Gandaki Province in this case. The growth rate of working-age population is also surpassing over that of overall population and child dependents among them in all the regions of Nepal. Thus, there is a strong association between higher educational attainment and more demographic windows of opportunity for economic development. A greater percentage in higher education may help to lower fertility and thus lead to declining dependents in favour of a demographic dividend.

Figure 5.2: Secondary level of education or more and different measures of demographic dividend by geographic regions of Nepal and wealth quintile, Nepal, 2021



Unlike in the case of higher educational attainment, the lower share of the working-age population is found to be associated with the higher proportion of population aged 5 years and above with below secondary level of educational on one hand, while on the other, higher proportion of child dependents, higher dependency ratio and higher proportion of old-age population are accompanying with higher proportions in below secondary level of education. Therefore, the data further reveal that there is strong association between higher educational attainment and more demographic windows of opportunity for economic development.

Figure 5.3: Below secondary level of education and different measures of demographic dividend by geographic regions of Nepal and wealth quintile, Nepal, 2021

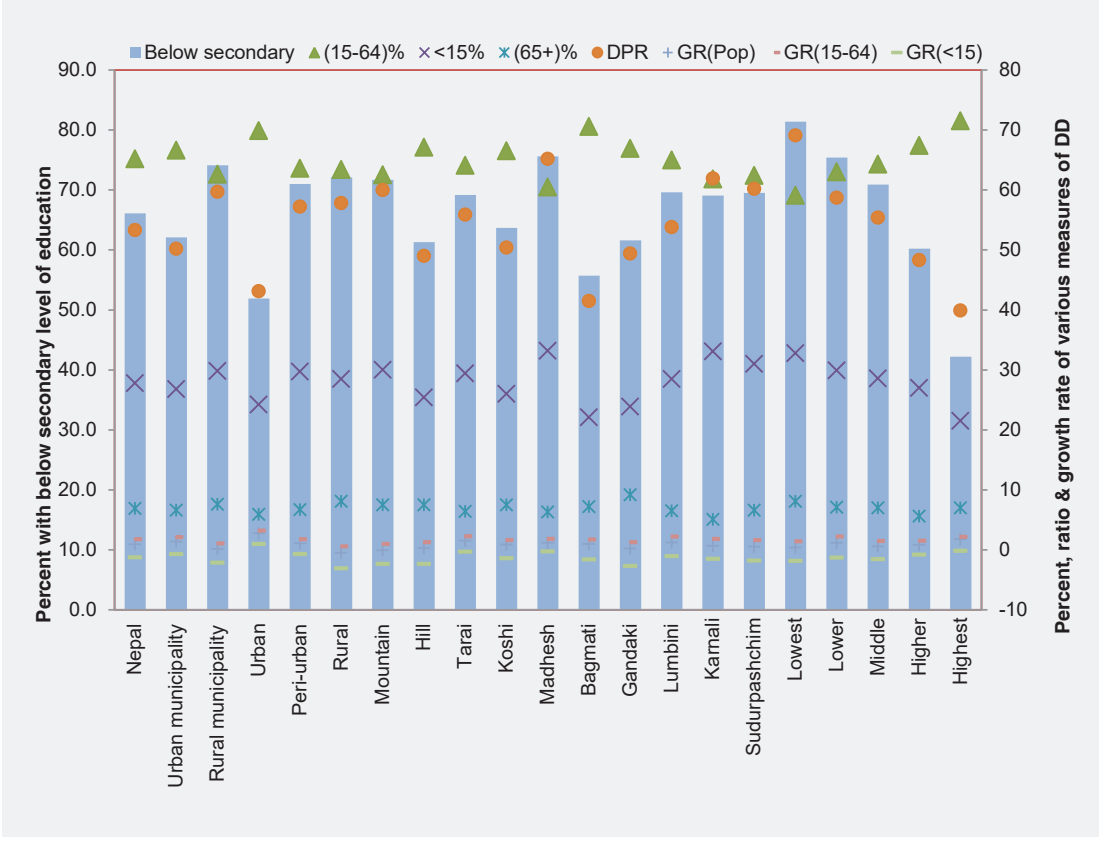


Table 5.2: Educational attainment (%) by geographic regions of Nepal, 2021

Area	Below secondary			Secondary or above		
	Male	Female	Both sexes	Male	Female	Both sexes
Nepal	62.5	69.5	66.1	37.5	30.5	33.9
Urban-rural municipality						
Urban municipality	58.4	65.5	62.1	41.6	34.5	37.9
Rural municipality	70.7	77.2	74.1	29.3	22.8	25.9
Urban-rural area						
Urban	48.3	55.6	51.9	51.7	44.4	48.1
Peri-urban	67.3	74.5	71.0	32.7	25.5	29.0
Rural	69.2	74.8	72.1	30.8	25.2	27.9
Ecological belt						
Mountain	67.6	75.5	71.7	32.4	24.5	28.3
Hill	57.7	64.6	61.3	42.3	35.4	38.7
Tarai	65.6	72.5	69.2	34.4	27.5	30.8
Province						
Koshi	61.2	66.0	63.7	38.8	34.0	36.3
Madhesh	70.4	80.7	75.6	29.6	19.3	24.4
Bagmati	52.4	59.0	55.7	47.6	41.0	44.3
Gandaki	57.9	64.9	61.6	42.1	35.1	38.4
Lumbini	66.8	72.0	69.6	33.2	28.0	30.4
Karnali	65.7	72.2	69.1	34.3	27.8	30.9
Sudurpashchim	65.5	73.0	69.5	34.5	27.0	30.5
Wealth quintile						
Lowest	78.1	84.7	81.4	21.9	15.3	18.6
Lower	72.7	77.9	75.4	27.3	22.1	24.6
Middle	67.4	74.1	70.9	32.6	25.9	29.1
Higher	56.7	63.4	60.2	43.3	36.6	39.8
Highest	37.3	46.9	42.2	62.7	53.1	57.8

Source: Calculations from 2021 Census data.

5.3 Labour force participation

The labour force participation rates (LFPR) in Nepal for geographic region are presented in Table 5.3 for the period of 2011-2021. These rates are increasing over time and 2021 Census data estimated the rate as 65.4 percent among population aged 10 years and above for both sexes (71.1% for males and 60.3% for females), which increased from 54.2 percent (62.5% for males and 46.8% for females)

in 2011. Different measures of demographic dividend are also here interconnected with combined charts of labour force participation rate and demographic dividend measures.

Figure 5.4 shows the associations between labour force participation rate and different measures of demographic dividend. Opposite to the case of literacy rate, the higher labour force participation rate is found associated with relatively lower share of working-age population, higher proportion of child dependents, higher dependency ratio and also a relatively higher proportion of old-age population, except in some regions and provinces in 2021. Also, the association with various factors varies as well. Therefore, the findings indicate that in the regions and provinces with high LFPR, the shift in the age structure of population may not be supporting enough of the demographic window of opportunity or vise-versa or the association between LFPR and demographic dividend can't be well explained.

Figure 5.4: Labour force participation rate and different measures of demographic dividend by geographic regions of Nepal and wealth quintile, 2021

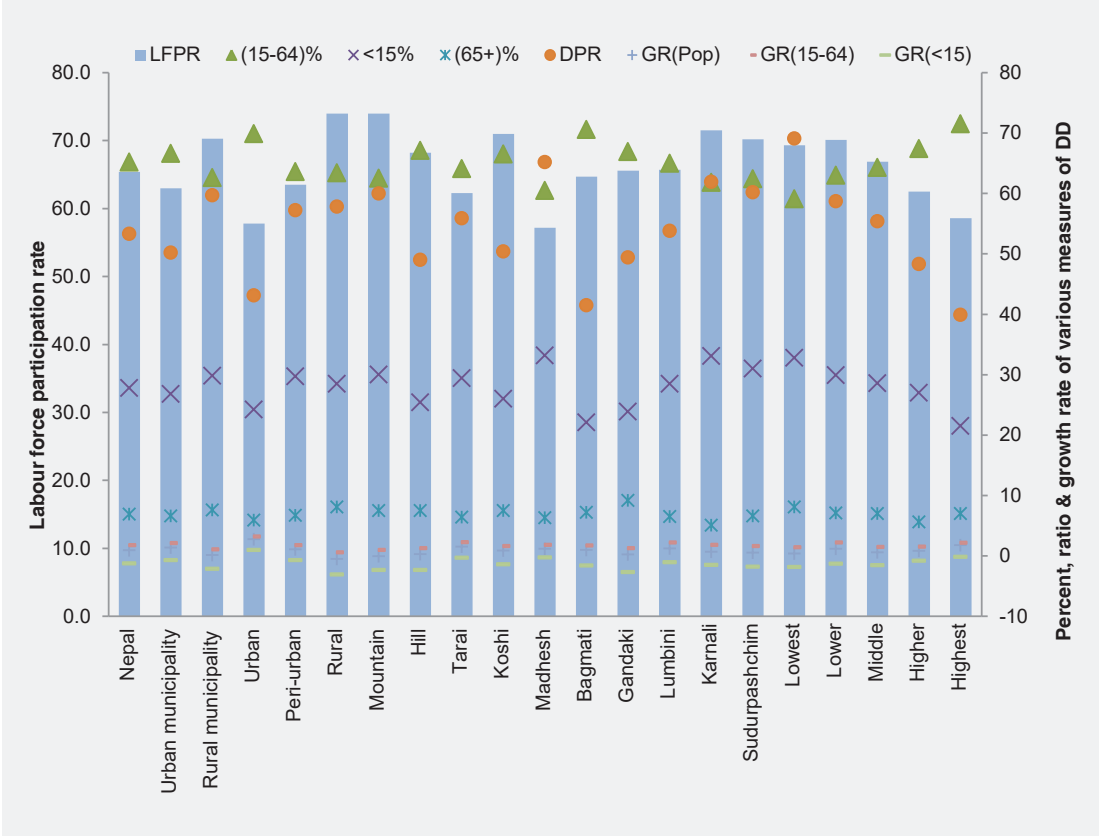


Table 5.3: Labour force participation rate (excluding institutional) (%) by geographic regions of Nepal and wealth quintile, 2011-2021

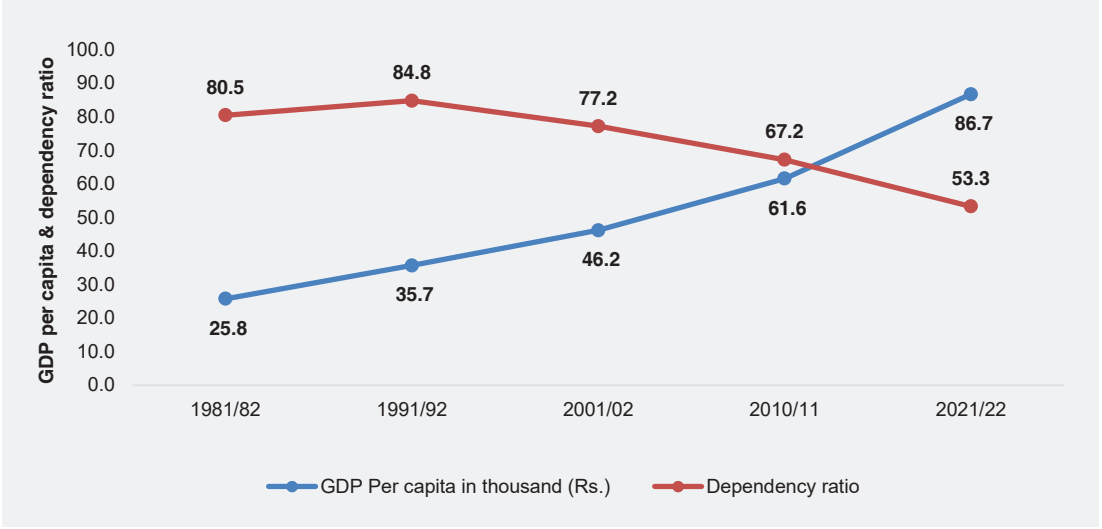
Area	2011			2021		
	Male	Female	Both sexes	Male	Female	Both sexes
Nepal	62.5	46.8	54.2	71.1	60.3	65.4
Urban-rural municipality						
Urban municipality	58.0	31.1	44.4	69.5	57.0	63.0
Rural municipality	63.5	50.0	56.3	74.2	66.8	70.3
Urban-rural area						
Urban	59.0	32.6	45.7	66.4	49.7	57.8
Peri-urban	63.1	40.5	51.4	70.5	57.2	63.5
Rural	64.1	61.0	62.4	75.8	72.4	74.0
Ecological belt						
Mountain	68.0	67.0	67.5	75.5	72.6	74.0
Hill	61.6	53.5	57.2	72.0	64.7	68.2
Tarai	62.5	38.0	49.9	69.8	55.4	62.3
Province						
Koshi	66.0	51.5	58.3	76.4	66.0	71.0
Madhesh	62.4	28.1	45.2	67.2	47.5	57.2
Bagmati	62.5	47.0	54.6	70.7	59.1	64.7
Gandaki	59.0	55.1	56.8	68.7	63.0	65.6
Lumbini	62.3	48.9	55.1	70.9	61.1	65.7
Karnali	61.7	57.0	59.2	73.0	70.2	71.5
Sudurpashchim	59.9	55.7	57.6	72.0	68.7	70.2
Wealth quintile						
Lowest	66.6	53.3	59.6	73.2	65.7	69.3
Lower	64.2	49.6	56.5	74.1	66.5	70.1
Middle	62.9	52.7	57.4	72.5	61.8	66.9
Higher	60.9	44.5	52.2	69.5	56.2	62.6
Highest	58.0	32.9	45.2	66.3	51.4	58.6

Source: Calculations from 2011 and 2021 Census data.

5.4 GDP per capita and the dependency ratio in Nepal, 1981/82-2021/22

Figure 5.5 shows the relationship between GDP per capita at constant price (2010/11=100) and the dependency ratio from 1981/82 to 2021/22, offering insight into the economic trajectory and demographic changes of Nepal. This analysis is particularly relevant in the context of population economics, which often explores the impacts of demographic shifts on economic growth.

Figure 5.5: GDP per capita and the dependency ratio from 1981/82-2021/22



Source: Analysis based on NSO data.

From 1981/82 to 2021/22, we observe a noticeable increase in GDP per capita, from NPR 25.8 thousand to NPR 86.7 thousand. This steady rise in economic well-being suggests that Nepal has experienced considerable economic development and improved productivity over the last four decades. Concurrently, the dependency ratio, which measures the proportion of dependents to the working-age population, has shown a notable decrease from 80.5 to 53.3 in the same period. This demographic evolution indicates a reducing burden on the economically active portion of the population, potentially catalyzing further economic growth. The analysis of distinct intervals within this period further illustrates the relationship between these variables:

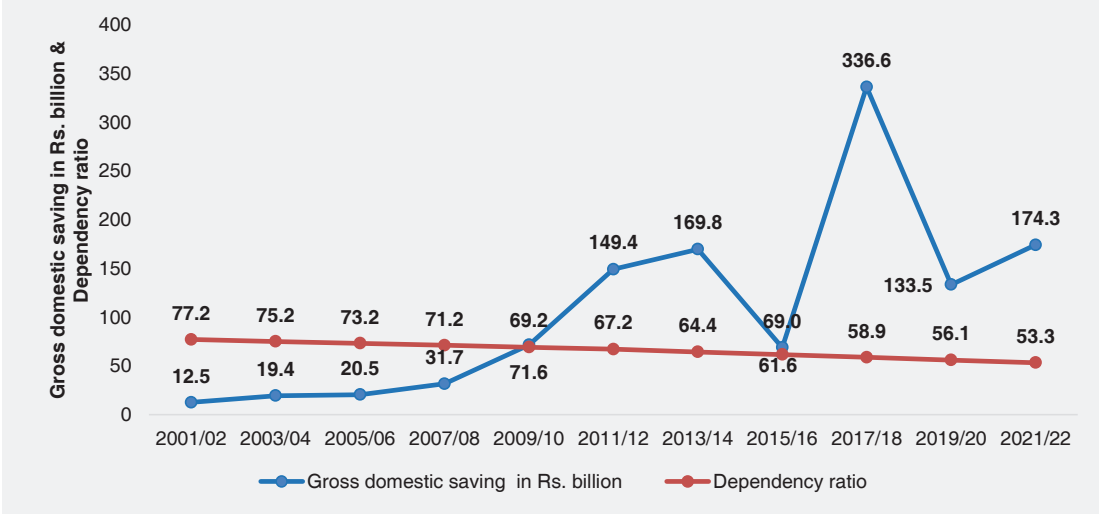
- Between 1981/82 and 1991/92, although GDP per capita rose modestly, the dependency ratio also increased, implying possible economic pressures from a higher dependent population.
- From 1991/92 to 2001/02, a reversal occurs with GDP per capita rising from NPR 35.7 thousand to NPR 46.2 thousand, alongside a decreasing dependency ratio. This period marks the commencement of the demographic changes that favour economic expansion, possibly beginning to capitalize on the demographic dividend.
- The interval from 2001/02 to 2010/11 underscores this trend more robustly. As the dependency ratio continues to decline to 67.2, GDP per capita surges to NPR 61.6 thousand. This era likely indicates a realisation of the demographic dividend, where a larger share of the population is contributing to the economy.
- The most recent data from 2010/11 to 2021/22 shows the dependency ratio reaching its lowest at 53.3, while GDP per capita peaks at NPR 86.7 thousand, highlighting the strongest phase of economic benefit from demographic trends to date.

The data demonstrates a clear inverse relationship between the dependency ratio and GDP per capita, confirming the theoretical projections of the demographic dividend in population economics. This statement means that as the dependency ratio decreases – showing that there are relatively fewer dependents (like children and old-age population) compared to the working-age population – the GDP per capita tends to increase. There is therefore a potential relationship between the two, besides other possible factors like global economic, changes in the productivity of the working-age population, economic policies, technology advancements, social and political climate, etc. A lower dependency ratio suggests a larger share of the population is capable of working and contributing economically, which often leads to higher productivity and economic output per person. This increased economic potential in the working-age group contributes to a rise in GDP per capita, a measure of the average economic output per person in a country. Though the GDP per capita may not yet be at the desired level, the data suggests that the country has, to some extent, leveraged its demographic potential to drive economic growth. To achieve higher levels of growth moving forward, it will be crucial to implement policies that enhance the productivity and well-being of the expanding working-age population. This can be achieved through targeted investments in education, healthcare, and job creation initiatives.

5.5 Gross domestic savings and dependency ratio, 2001/02–2021/22

Figure 5.6 highlights two crucial aspects of Nepal's economy over the last two decades: Gross domestic savings at constant price (2010/11=100) and the dependency ratio. These trends offer insights into Nepal's economic progress while reflecting the impacts of significant events that shaped the country during this period.

Figure 5.6: Gross domestic saving at constant price (in NPR billion, 2010/11=100) and dependency ratio



Gross domestic savings at constant price (2010/11=100)

Gross domestic savings increased significantly over time, reflecting Nepal's improving economic strength. From a modest NPR 12.5 billion in 2001/02, it steadily grew to NPR 149.4 billion in 2011/12 and peaked at NPR 336.6 billion in 2017/18. However, this upward trajectory was interrupted by two major events. The 2015 earthquake caused severe economic and social devastation, redirecting household and national resources toward reconstruction. As a result, the gross domestic savings declined sharply, falling to NPR 69 billion in 2015/16.

The COVID-19 pandemic further reduced savings as families relied on their reserves to sustain themselves during prolonged lockdowns and economic disruptions. By 2021/22, savings had partially recovered to 174.3, though they remained below pre-pandemic levels.

Dependency ratio

The dependency ratio has seen a consistent and gradual decline, dropping from 77.2 dependents for every 100 working-age population in 2001/02 to 53.3 in 2021/22. This decline indicates a demographic transition, with fewer dependents compared to the working-age population. Such a trend is favourable for economic growth, as it suggests a larger share of the population is productive and contributing to the economy.

Gross domestic savings and dependency ratio

The relationship between these two indicators is theoretically evident. As the dependency ratio decreases, households have fewer financial burdens, allowing for higher savings despite possible higher consumptions as well. Similarly, a larger working-age population supports economic activity and overall domestic savings growth. However, significant events like the 2015 earthquake and the COVID-19 pandemic disrupted this pattern, underscoring the vulnerability of savings to external shocks.

Nepal's progress in reducing the dependency ratio and increasing gross domestic savings reflect a positive trajectory. However, the impacts of the 2015 earthquake and the COVID-19 pandemic serve as reminders of the country's vulnerability to shocks. Moving forward, Nepal has the potential to harness its demographic advantage and promote inclusive growth, provided that policies are directed toward resilience, equity, and long-term economic stability.

CHAPTER 6

DEMOGRAPHIC DIVIDEND INDICES

The demographic dividend index (DDI), in relation to 3Es (empowerment, enrolment and employment), is examined here for different geographic areas of Nepal. Furthermore, the demographic dividend effort index (DDEI) associated with maternal and child health; education; family planning; women's empowerment; labour market; and governance and economic institutions are estimated to understand the demographic dividend situation of the country.

6.1 Demographic dividend index (DDI) based on census data

Though the demographic dividend index (DDI) is not applied more often globally to analyse population situation in relation to development, its use in Nepal in this report is due to a few specific reasons. This index and its three components described above have been used in multiple publications of UNFPA, particularly in the case of Nepal (UNFPA, 2017, 2015a, 2015b, Zhang et al., 2016), using 2011 Census data. By comparing any change in the index values during 2011-2021, it could also suggest the potential of economic growth through the shift in 3Es and population age-sex structure.

The DDI focuses on the three investment areas of empowerment, education and employment, which are referred to as the 3Es. These areas combine to help people realize their potential, increase their wealth and contribute to development. The 3Es of DDI are:

- Empowerment measured in terms of child marriage ratio (CMR): the ratio of women aged 18-24 years who married before turning 18;
- Education measured in terms of secondary school net attendance ratio (NAR): the ratio of students between the ages of 11 and 15 years who attended secondary school; and
- Employment measured in terms of the proportion of 15-24 years old who are not in education, employment and training (NEET) per hundred 15-24 years old. This report defines NEET as the number of 15-24 years old who are no longer in the education system and who are not working or have worked for less than six months in the year while looking for work, and who had a reason other than education for not working.

The DDI of Nepal increased from 65.4 in 2011 to 70.0 in 2021. The index ranges from 1-100 and the higher DDI index implies a greater chance of realizing a demographic windows of opportunity compared to its lower index value. So, the index value of 70.0 implies that Nepal is currently moving towards the midst of upper-half of demographic dividend stage before its exit.

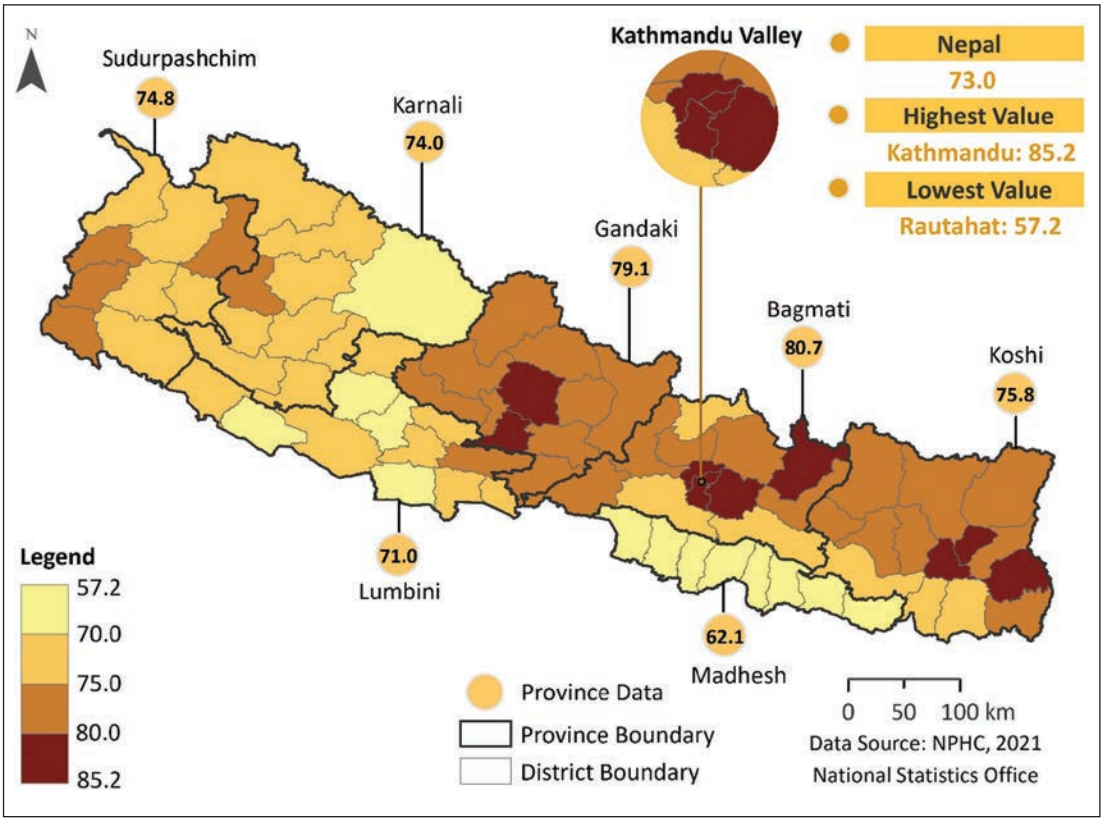
The DDI increased in all geographic regions of Nepal over time 2011-2021, except in urban municipalities, which may have been affected by re-classification of urban municipalities during the period. But it is still higher in urban municipalities than in rural municipalities (74.2 vs. 70.8). The DDI is higher in urban areas (78.5), Hill (78.2) and Bagmati Province (80.7) compared to other regions and the patterns are similar in previous census year also (Table 6.1) indicating regions with higher DDI index have more demographic windows of opportunity for economic development.

Table 6.1: Demographic dividend index by geographic regions of Nepal, 2011-2021

Area	Year		Area	Year	
	2011	2021		2011	2021
Nepal	65.40	70.03	**Province**		
Urban-rural municipality			Koshi	70.75	75.83
Urban municipality	75.72	74.17	Madhesh	52.47	62.10
Rural municipality	63.27	70.84	Bagmati	74.13	80.73
Urban-rural area			Gandaki	71.47	79.11
Urban	74.10	78.45	Lumbini	61.97	70.95
Peri-urban	60.77	68.05	Karnali	60.69	74.00
Rural	64.85	74.42	Sudurpashchim	62.86	74.80
Ecological belt					
Mountain	63.76	75.78			
Hill	70.45	78.24			
Tarai	60.98	68.83			

Source: Calculations from 2011 and 2021 Census data.

Figure 6.1: Demographic dividend index (DDI) by geographic regions of Nepal, Nepal, 2021



Among the districts in 2021, the demographic dividend index (DDI) was highest in Kathmandu (85.2) followed by Lalitpur (83.9), Bhaktapur (83.7), Kaski (82.2), Syangja (81.9), Ilam (80.7), Tehrathum (80.6), Dhankuta (80.6), Kavrepalanchok (80.4) and Dolakha (80.4) (Figure 6.2). The lowest DDI was observed in the districts like Rautahat (57.2), Mahottari (60.4), Dhanusha (60.6), Sarlahi (61.0%), Bara (62.8), Siraha (63.7), Kapilbastu (64.3), Parsa (65.9), Banke (66.4) and Saptari (67.0). The higher DDI was seen in all three districts of Kathmandu Valley and other additional six Hill zone districts, altogether five districts of Bagmati Province, three from Koshi Province and two from Gandaki Province; including only one district from Mountain region, and not any from Tarai zone. All the districts with lower DDI were found in Tarai, with 8 out of 10 in Madhesh Province and two from Lumbini Province. There are no large differences in the ten districts with highest (9 of 10) and lowest (7 of 10) DDIs during 2011-2021 (Annex 11).

Figure 6.2: Ten districts with the highest and the lowest demographic dividend index, Nepal, 2021

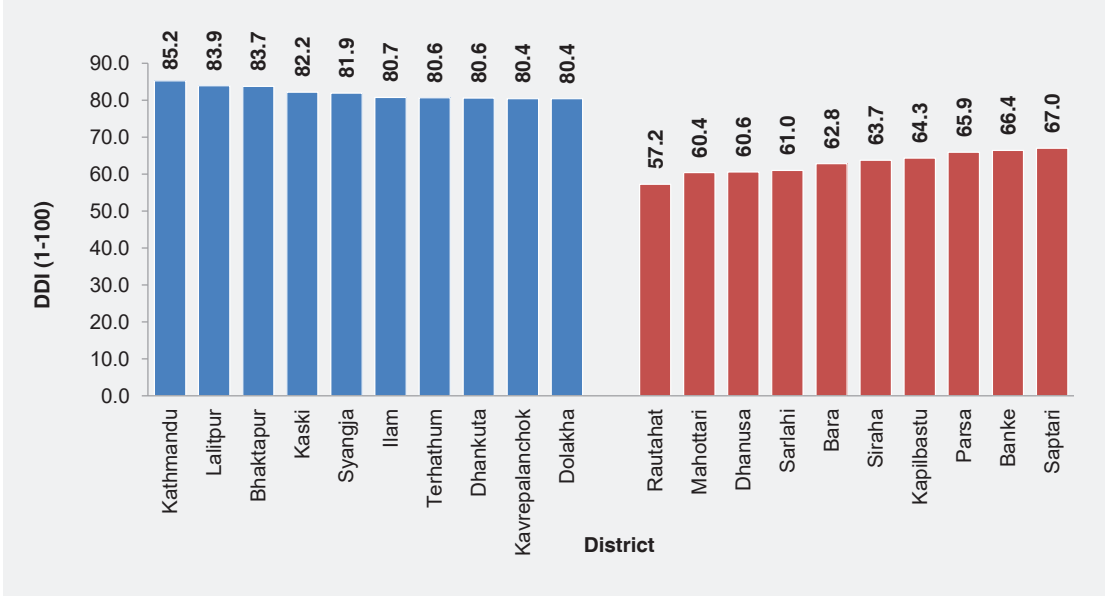
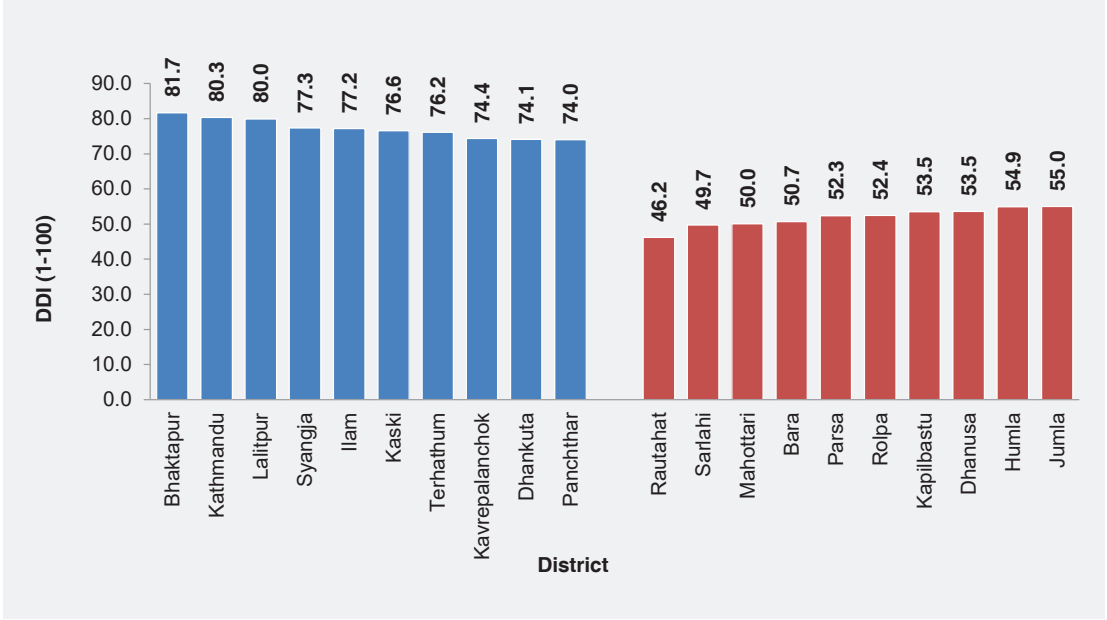


Figure 6.3: Ten districts with the highest and the lowest demographic dividend index, Nepal, 2011



6.2 Demographic dividend effort index (DDEI)

The Demographic Dividend Effort Index (DDEI) is a composite measure designed to assess a country's progress and potential in harnessing its demographic dividend. The demographic dividend refers to the economic growth potential that can result from shifts in a population's age structure, typically when the share of the working-age population is larger than the non-working-age share of the population.

The DDEI evaluates and quantifies a country's efforts across multiple sectors that are critical for capitalizing on the demographic dividend opportunity. It typically includes, but is not limited to, the following key components:[5]

i. Maternal and child health;

ii. Education;

iii. Family planning;

iv. Women's empowerment;

v. Labour market conditions; and

vi. Governance and economic institutions.

Each of these components is scored individually, often on a scale (e.g., 0-10), and then combined to produce an overall DDEI score. The index aims to provide policymakers, researchers, and international organisations with a tool to:

- Measure a country's current state of preparedness for leveraging its demographic dividend;
- Track progress over time in key areas related to demographic dividend potential;
- Identify sectors that require more attention or investment;
- Facilitate cross-country comparisons and benchmarking; and
- Guide policy formulation and resource allocation to maximize demographic dividend benefits.

By offering a multidimensional view of a country's efforts, the DDEI helps in understanding not just the demographic transition itself, but also the socioeconomic conditions and policy environments that are necessary to translate demographic changes into economic growth and development.

It is important to note that, while the DDEI measures efforts and potential, it does not directly measure the realisation of the demographic dividend itself. Rather, it indicates how well-positioned a country is to benefit from its demographic transition based on its investments and progress in critical areas. The method of calculating the DDEI typically involves the following key steps:

5 As mentioned in https://demographicdividend.org/DDEI/

i. Component selection

The index is based on multiple components or sectors deemed crucial for harnessing the demographic dividend. These usually include maternal and child health, education, family planning, women's empowerment, labour market conditions, and governance and economic institutions.

ii. Indicator identification

For each component, specific indicators are selected that can be reliably measured and are representative of progress in that area. For example, under education, indicators might include primary school net enrollment rate, net enrollment at secondary school (both sexes), literacy rate (among aged 15-24) and gender parity index (GPI) in primary education. The list of indicators used in computing DDEI for each sector has been provided in the annex.

iii. Data collection

Data for each indicator has been extracted from reliable sources, which include government official statistics from national statistics offices and international organisations (like the UN and World Bank).

iv. Normalisation

As indicators often have different units and scales, they are transformed to a common scale (often 0-10) to make them comparable.

v. Weighting

Each indicator and component is assigned a weight based on its perceived importance to the overall demographic dividend potential based on expert opinion, statistical methods, or policy priorities. Equal weights are desirable in absence of representative weights of each component.

vii. Aggregation

The normalized and weighted scores for each indicator are combined to create component scores. These component scores are then aggregated to produce the overall DDEI score.

viii. Validation

The results have been validated through expert review to ensure they accurately reflect the country's efforts and potential.

viii. Time series analysis

The index is often calculated across multiple years to monitor progress over time. In this report, data from approximately 2011 and 2021 were used to compute the DDEI for these years, and the results were compared.

This methodology allows for a comprehensive assessment of Nepal's efforts towards harnessing its demographic dividend, providing a nuanced view of progress across different sectors and over time. However, it's important to note that the specific methodological details may vary with the practices depending on the organisation or researchers conducting the analysis.

6.3 Nepal's DDEI in 2011/12 and 2021/22

The DDEI for Nepal has been calculated using six key sectors that are crucial in assessing the country's utilisation of its demographic dividend. These sectors are represented by a total of 21 indicators, distributed across family planning (2 indicators), maternal and child health (6 indicators), education (4 indicators), women's empowerment (3 indicators), labour market (2 indicators), and governance and economic institutions (4 indicators).

Data for each indicator were collected from various sources for the years 2011 and 2021, or the closest available years. The methodology for calculating the DDEI involves several steps. First, each indicator is normalized to create an index with values ranging from 0 to 1. These normalized indices are then converted to a 0-10 scale by multiplying each index by 10.

Within each sector, indicators are given equal weight, and the sector's DDEI is calculated as the average value of its indicators. The final overall DDEI for Nepal is determined by calculating the average of all indicators taken together from all sectors. This comprehensive approach allows for a nuanced assessment of Nepal's progress in harnessing its demographic dividend across multiple dimensions of development. By comparing the DDEI values between 2011 and 2021, it's possible to identify areas of improvement and sectors that may require more focused attention in policymaking and resource allocation.

Table 6.2: Sector-specific and overall DDEI of Nepal in 2011/12 and 2021/22

Sector	2011/12	2021/22
Family Planning	4.5	5.1
Maternal and Child Health	6.1	8.2
Education	8.3	8.4
Women's Empowerment	4.3	4.6
Labour Market	5.5	5.5
Governance and Economic Institutions	3.8	4.0
Overall DDEI	5.4	**6.0**

.Source: Report team's computation

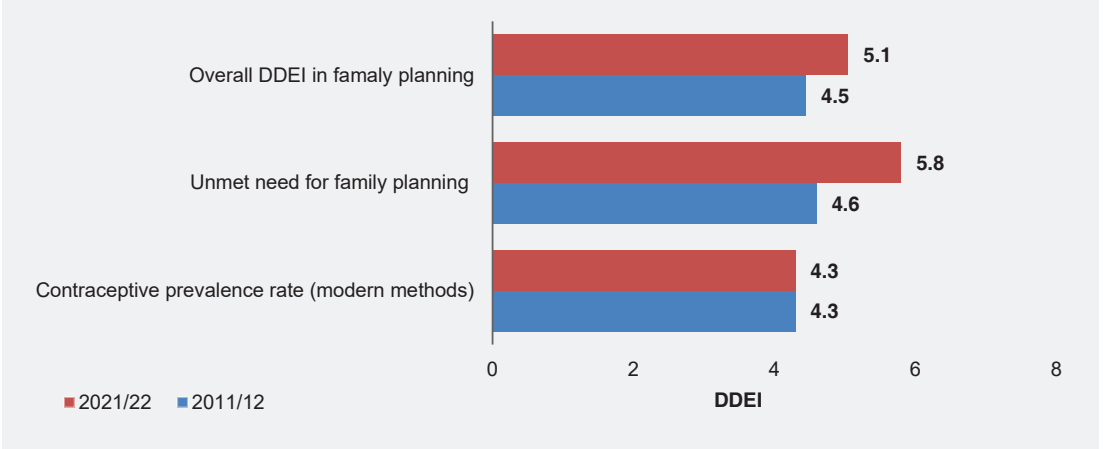
Table 6.2 shows the Nepal's overall and sector-specific DDEIs over the decade. The overall DDEI score increased from 5.4 to 6.0 over the decade, representing an 11.1 percent improvement. This positive trend suggests that Nepal has been making some efforts to capitalize on its demographic dividend potential. However, the moderate pace of improvement indicates that there's still substantial room for further improvement. With its range between 0-10, the index of 6.0 in 2021/22 may suggest that the country is currently heading towards the midst of upper-half of demographic dividend stage .before its exit as in the case of DDI

a) Family planning

The family planning sector utilized two key indicators: i) contraceptive prevalence rate (CPR) for modern methods; and ii) unmet need for family planning to compute the demographic dividend effort index (DDEI) for this component. These indicators were chosen to provide a comprehensive assessment of family planning efforts and their potential impact on demographic trends. The CPR for modern methods measures the proportion of women using effective contraceptive methods, while the unmet need for family planning captures the gap between women's reproductive intentions and their contraceptive use. By combining these two measures, the DDEI aims to offer a more nuanced understanding of both the current state of family planning adoption and the potential for further improvements in this crucial sector.

The data show that the CPR remained unchanged at 43 percent between 2011/12 and 2021/22, resulting in a constant DDEI score of 4.3 for this indicator. However, there was a moderate improvement in the unmet need for family planning, which declined from 27 percent in 2011/12 to 23 percent in 2021/22. This progress led to an increase in its DDEI score, rising from 4.6 to 5.8 over the decade. The improvement in DDEI score in latter indicator contributed to a slight improvement in the overall DDEI score in the family planning sector.

Figure 6.4: DDEI for family planning sector between 2011/12 and 2021/22



This family planning sector shows increase in its score from 4.5 in 2011/12 to 5.1 in 2021/22, indicating a positive trend in Nepal's efforts over this decade. This improvement of 0.6 points, or a 13.3 percent increase in ten years, suggests that Nepal has been making modest efforts to enhance its family planning services to capitalize on the demographic dividend. The rise in the DDEI score reflects a growing recognition of the importance of family planning in shaping the country's demographic future and its potential economic benefits.

The increase from 4.5 to 5.1 on a scale that ranges from 0 to 10 indicates moderate progress. While the improvement is noteworthy, it also suggests that there is still substantial room for enhancement in Nepal's family planning efforts. This score implies the need for comprehensive and intensive efforts to fully leverage the demographic dividend through family planning.

In conclusion, the rise in Nepal's DDEI score for the family planning sector from 2011/12 to 2021/22 indicates a positive trajectory in the country's efforts to harness its demographic dividend. However, with a score of 5.1 out of 10, there remains significant potential for further improvement. This data underscores the need for continued and perhaps intensified focus on family planning as a key component of Nepal's strategy to maximize its demographic dividend in the coming years.

b) Maternal and child health

The maternal and child health (MCH) sector incorporated six critical indicators to compute the demographic dividend effort index (DDEI). These include: i) maternal mortality ratio (MMR); ii) under-5 mortality rate; iii) infant mortality rate (IMR); iv) vaccination coverage, or proportion of the target population covered by all vaccines included in the national programme; v) antenatal care coverage-percentage of women receiving at least 4 antenatal visits; and vi) institutional delivery rate-proportion of births occurring in healthcare facilities.

These indicators were carefully selected to provide a comprehensive assessment of maternal and child health outcomes and healthcare access. They encompass key aspects of reproductive health, child survival, preventive care, and healthcare utilisation.

By combining mortality rates (MMR, Under-5 and IMR) with process indicators (vaccination coverage, antenatal care visits, and institutional deliveries), the DDEI aims to capture both the outcomes and the quality of healthcare services provided. This multifaceted approach allows for a more nuanced evaluation of progress in maternal and child health, a crucial component of demographic transition and socioeconomic development.

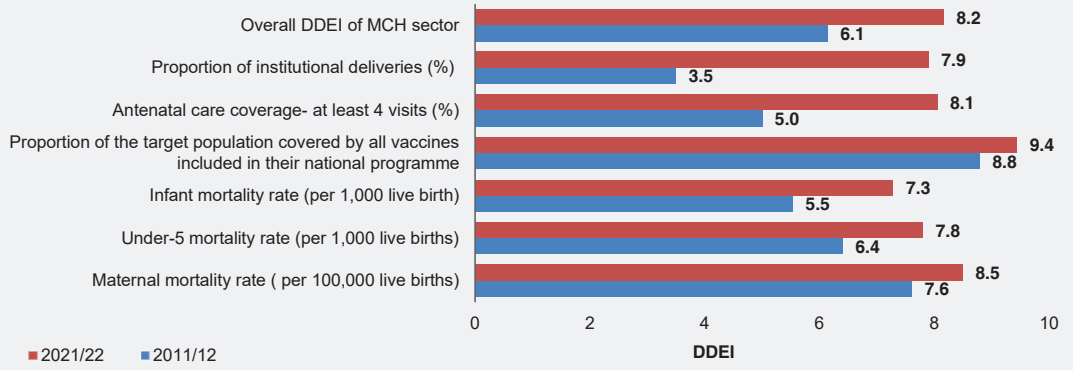
Figure 6.5 illustrates key maternal and child health (MCH) indicators, comparing data from 2011/12 and 2021/22, and highlights notable progress across most areas. The DDEI score for institutional deliveries more than doubled, increasing from 3.5 in 2011/12 to 7.9 in 2021/22, reflecting enhanced

access to and utilization of healthcare facilities during childbirth, which reduces maternal and neonatal health risks. Similarly, the DDEI score for antenatal care coverage, measured by women completing at least four visits, rose significantly from 5.0 to 8.1, indicating better awareness and access to essential maternal health services.

Vaccination coverage, represented by the DDEI score for the proportion of the target population covered by all vaccines in the national program, also improved, rising from 8.8 in 2011/12 to 9.4 in 2021/22. This progress underscores sustained efforts to strengthen immunization programs and protect against preventable diseases. Furthermore, the DDEI score for infant mortality improved from 7.3 to 5.5 per 1,000 live births, while the under-5 mortality rate score decreased from 7.8 to 6.4 per 1,000 live births, highlighting significant improvements in neonatal and early childhood health services. Maternal mortality also saw a reduction, with the DDEI score dropping from 8.5 to 7.6 per 100,000 live births over the decade. While this reduction is noteworthy, further efforts are necessary to sustain and accelerate the pace of decline.

These improvements in DDEI scores across maternal and child health indicators signify progress in healthcare access and quality, contributing to the demographic dividend by fostering healthier populations capable of economic productivity. However, continued investments in healthcare infrastructure, service quality, and equitable access remain essential to maintain this momentum and achieve long-term development goals.

Figure 6.5: DDEI score across maternal and child health sector between 2011/12 and 2021/22



The sector showed the remarkable progress made in the maternal and child health sector in Nepal between 2011/12 and 2021/22, as reflected in the overall DDEI score. The sector's score increased significantly from 6.1 to 8.2, representing a 34.4 percent improvement. This substantial rise indicates that Nepal has made considerable strides in improving the maternal and child health over the decade. The magnitude of this improvement is particularly noteworthy, as it outpaces progress in other sectors.

The analysis suggests that this progress is likely the result of several targeted interventions and investments in the healthcare system. These may include:

- Expansion and improvement of healthcare infrastructure, making medical facilities more accessible to a larger portion of the population;
- Enhanced access to prenatal and postnatal care services, which are crucial for ensuring the health of both mothers and newborns;
- Strengthened vaccination programs, helping to prevent childhood diseases and reduce infant mortality rates; and
- Implementation of better nutrition initiatives focused on mothers and children, addressing issues like malnutrition and promoting healthy development.

The high score of 8.2 achieved in 2021/22 is particularly impressive, as it suggests that Nepal's performance in maternal and child health is praiseworthy. This is a critical achievement, as improvements in this sector have far-reaching effects on overall population health. Reduced infant and maternal mortality rates, in particular, are key indicators of a country's health system effectiveness and are closely linked to its potential for harnessing the demographic dividend.

This progress in maternal and child health represents a significant step forward for Nepal in its efforts to improve public health and create the conditions necessary for capitalizing on its demographic dividend. It demonstrates the country's commitment to investing in the health and well-being of its population, which is fundamental to long-term social and economic development.

c) Education

The education sector utilized four key indicators to compute the Demographic Dividend Effort Index (DDEI) for this component. These indicators are: i) primary school net enrollment rate; ii) secondary school net enrollment rate (both sexes); iii) youth literacy rate (aged 15-24); and iv) gender parity index (GPI) in primary education. These indicators were strategically chosen to provide a comprehensive assessment of educational access, participation, and equity across different levels of schooling. The enrollment rates at primary and secondary levels measure the extent of educational participation among school-age children. The youth literacy rate serves as an outcome indicator, reflecting the effectiveness of the education system in imparting basic skills. The Gender Parity Index in primary education addresses the critical aspect of gender equality in access to education.

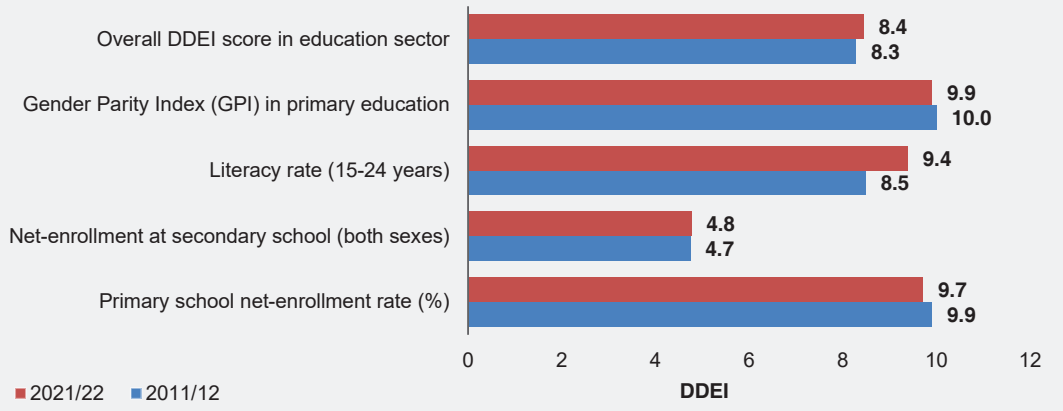
By combining these metrics, the DDEI aims to capture not only the quantity of education (through enrollment rates) but also its quality (through literacy rates) and inclusivity (through gender parity). This multifaceted approach allows for a more nuanced evaluation of a country's educational progress, which is a crucial factor in realizing the demographic dividend and fostering long-term socioeconomic development.

Figure 6.6 highlights the progress in the demographic dividend effort index (DDEI) scores for the education sector between 2011/12 and 2021/22, along with the corresponding indicators. The overall DDEI score for education shows a slight improvement, increasing from 8.3 in 2011/12 to 8.4 in 2021/22, signifying continued but incremental efforts in enhancing educational outcomes.

Among the specific indicators, the Gender Parity Index (GPI) in primary education remains high, with scores of 10.0 in 2011/12 and 9.9 in 2021/22, indicating almost sustained gender balance in primary school enrollment. Similarly, the literacy rate among the 15–24 age group has shown notable improvement, with the DDEI score rising from 8.5 in 2011/12 to 9.4 in 2021/22, reflecting progress in educational outreach and learning outcomes for youth.

In secondary education, the net enrollment rate for both sexes shows marginal progress, with the DDEI score increasing slightly from 4.7 to 4.8 over the decade. On the other hand, the primary school net enrollment rate remains almost stable at a high score of 9.9 in 2011/12 and 9.7 in 2021/22, demonstrating consistent efforts in ensuring access to primary education for children.

Figure 6.6: DDEI across education sector



These findings suggest that while the education sector has maintained strong performance in key areas such as gender parity, literacy, and primary education enrollment, challenges remain in achieving substantial improvements in secondary school enrollment. Continued investments and targeted interventions are required to address these gaps and sustain the progress toward maximizing the demographic dividend through education.

Education in Nepal saw an improvement in its DDEI score, rising from 8.3 to 8.4, representing a 1.2 percent increase over the decade. While this growth is small compared to some other sectors, it's important to note that education maintained the highest score among all sectors in both time periods.

This consistency demonstrates Nepal's ongoing commitment to prioritizing education as a key area for national development.

The high score achieved in this sector suggests several positive aspects of Nepal's education system, as follows:

- Good access to primary and secondary education, indicating that a large proportion of the population is able to attend school;
- Possible improvements in teacher training programs, which can lead to better quality education; and
- Efforts to reduce gender disparities in education, promoting equal opportunities for boys and girls to access schooling.

These factors contribute to creating a more educated workforce, which is crucial for harnessing the demographic dividend and driving economic growth. However, the relatively small improvement in the education sector over the ten-year period might:

- Indicate a plateau effect as Nepal may have reached a point where further significant improvements in education are becoming more challenging to achieve. This is often seen in countries that have already made substantial progress in basic education metrics;
- Suggest the need for more targeted interventions: The slow rate of improvement could indicate that broad-based educational policies are no longer sufficient. More specific, targeted interventions may be necessary to address remaining educational challenges;
- Reflect resource constraints. The modest improvement might be a result of limited financial or human resources available for further enhancing the education system;
- Point to quality issues. While quantitative measures of education (like enrollment rates) might be high, the small improvement could suggest challenges in improving the quality of education;
- Highlight emerging challenges. New obstacles, such as the need for more advanced technical skills or adapting to technological changes in education, might be slowing down overall progress;
- Indicate a mismatch between education and labour market needs. The slow improvement might reflect difficulties in aligning the education system with the evolving needs of the job market;
- Suggest the need for policy review. It may be time for Nepal to reassess its educational policies and strategies to identify areas that need renewed focus or innovative approaches; and

- Reflect broader socio-economic challenges. Factors outside the education system, such as poverty or regional disparities, might be limiting the pace of educational improvement.

To address this, Nepal may look to take the following actions:

- Conduct a comprehensive review of its education system to identify specific areas for improvement;
- Invest in teacher training and curriculum development to enhance the quality of education;
- Focus on equitable access to education, particularly for marginalized groups;
- Strengthen the link between education and employment to ensure that skills taught are relevant to the job market; and
- Explore innovative educational technologies and methodologies to overcome resource constraints and improve learning outcomes.

By addressing these issues, Nepal can work towards accelerating progress in its education sector, which is crucial for fully leveraging its demographic dividend potential.

c) Women's empowerment

The women's empowerment sector employed three key indicators to compute the Demographic Dividend Effort Index (DDEI) for this domain. These indicators provide a multifaceted view of women's participation and power in various spheres of society.

The first indicator, female labour force participation rate, measures women's engagement in economic activity. This measure is crucial as it reflects women's economic empowerment and their contribution to national productivity. A higher rate suggests greater economic opportunities for women and potentially more equitable societal norms.

The second indicator, Women in National Parliament, assesses women's representation in political decision-making processes. This measure is vital for ensuring that women's perspectives and interests are adequately represented in national policymaking, potentially leading to more inclusive and gender-sensitive legislation.

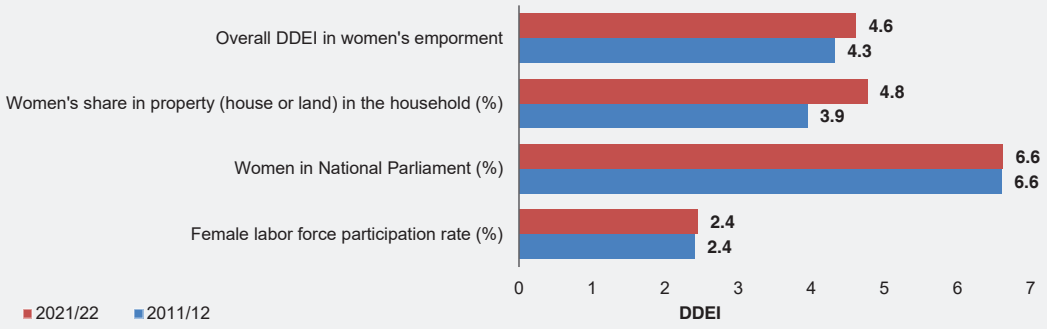
The third indicator, women's share in property (house or land) in the household, evaluates women's economic security and autonomy within the family unit. Property ownership is a key aspect of women's empowerment, providing financial stability and increasing their bargaining power within households and communities.

By incorporating these diverse indicators, the DDEI aims to capture a comprehensive picture of women's empowerment across economic, political, and domestic spheres. This holistic approach

recognizes that true empowerment requires progress in multiple areas of women's lives, contributing significantly to the overall demographic dividend of a nation.

There was a modest increase in the women's empowerment sector from 4.3 to 4.6, representing a 7 percent improvement over the decade. This positive trend indicates that Nepal has made some strides in advancing women's rights and opportunities. The progress could be attributed to various factors such as improved access to education for girls, increased awareness about gender equality, and policy initiatives aimed at promoting women's participation in various spheres of society.

Figure 6.7: DDEI across women empowerment sector between 2011/12 and 2021/22



While this shows some progress, the relatively low score suggests that significant barriers to women's empowerment persist in Nepal. The score of 4.6 out of 10 indicates that there is still a considerable way to go before achieving gender parity. This low score might reflect deep-rooted societal norms, institutional barriers, and economic disparities that continue to hinder women's full participation and empowerment in Nepalese society.

Areas for improvement might include increasing women's political participation, enhancing economic opportunities, and addressing cultural norms that limit women's advancement. To boost political participation, Nepal could consider implementing stronger quota systems or leadership training programs for women. Economic empowerment could be fostered through targeted microfinance initiatives, skill development programs, and policies that encourage women's entrepreneurship. Addressing cultural norms may require long-term efforts in education and awareness campaigns to challenge gender stereotypes and promote equality. By focusing on these areas, Nepal can work towards accelerating progress in women's empowerment, which is crucial for harnessing the full potential of its demographic dividend.

e) Labour market

The labour market sector utilized two key indicators to compute the Demographic Dividend Effort Index (DDEI) for this domain. These indicators were carefully selected to provide insight into the employment landscape, particularly focusing on youth engagement and overall workforce participation.

The first indicator, youth employment rate for ages 15-24 years, is crucial in assessing the ability of an economy to integrate its young population into the workforce. This metric is particularly significant in the context of the demographic dividend, as it reflects how effectively a country is harnessing the potential of its youth bubble. A higher youth employment rate suggests that young people are successfully transitioning from education to productive roles in the economy, which is essential for realizing the demographic dividend.

The second indicator, unemployment rate for ages 15 years and above, offers a broader perspective on the labour market's health. This measure encompasses the entire working-age population and provides insights into the overall economic conditions and job availability. A lower unemployment rate generally indicates a more robust economy with greater opportunities for productive engagement across all age groups.

By combining these two indicators, the DDEI aims to capture both the specific challenges faced by youth in entering the job market and the general state of employment in the country. This dual focus allows for a more comprehensive evaluation of a nation's progress in creating an environment conducive to leveraging its demographic dividend through productive employment opportunities for all working-age individuals, with a particular emphasis on youth integration into the workforce.

The labour market sector in Nepal demonstrated no improvement over the decade, with the score remaining static at 5.5. This lack of progress is particularly concerning given the crucial role that a robust and dynamic labour market plays in harnessing a country's demographic dividend. The stagnant score suggests that despite the passage of time, Nepal has been unable to make significant strides in addressing key labour market challenges.

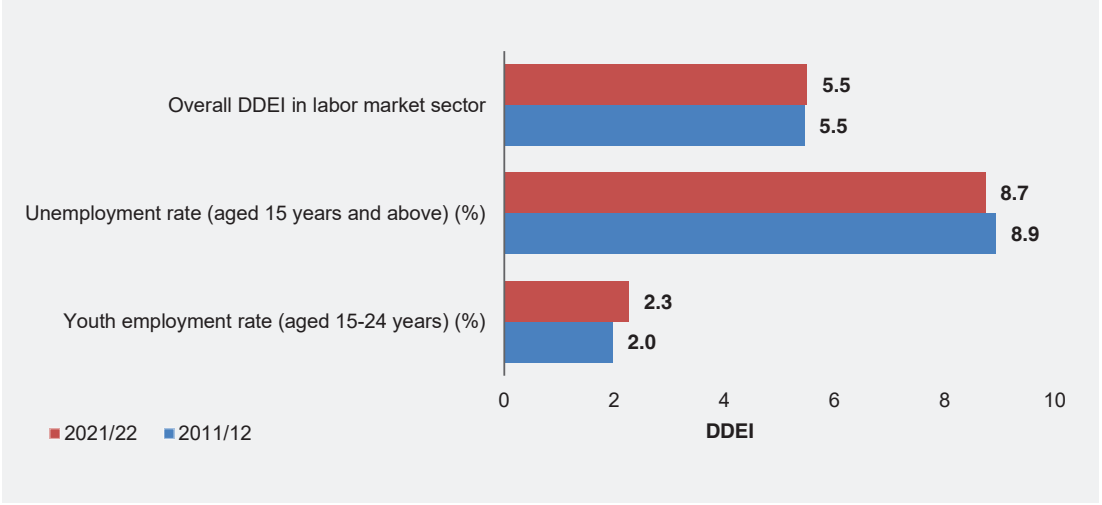
Figure 6.8 provides insights into the demographic dividend effort index (DDEI) scores for the labor market sector between 2011/12 and 2021/22, along with associated indicators. The overall DDEI score for the labor market sector remained stagnant at 5.5, indicating no improvement in efforts to address labor market challenges over the decade.

The DDEI score for the unemployment rate among individuals aged 15 years and above decreased slightly from 8.9 in 2011/12 to 8.7 in 2021/22, reflecting a worsening in unemployment conditions. This decline underscores ongoing labor market inefficiencies and the inability to create adequate job opportunities to meet the growing demand for employment.

Similarly, while the youth employment rate for individuals aged 15–24 years increased slightly from 2.0 to 2.3, the score remains critically low. This minimal progress highlights the persistent challenges young people face in accessing stable and productive employment, which is essential for leveraging the potential of the demographic dividend.

Overall, the stagnation and, in some cases, decline in DDEI scores within the labor market sector emphasize the urgent need for targeted interventions. Strategies such as expanding skill development programs, fostering entrepreneurship, and creating inclusive job opportunities are crucial to addressing these challenges and unlocking the economic benefits of a growing working-age population.

Figure 6.8: DDEI in labour market sector between 2011/12 and 2021/22



The lack of progress suggests persistent challenges in job creation, skills development, and labour market efficiency. Job creation is a fundamental aspect of absorbing the growing working-age population and converting it into economic growth. The stagnant score may indicate that Nepal's economy has not been able to generate enough quality jobs to keep pace with its demographic changes. Skills development is another critical area where progress seems to be lacking. This could mean that the education and training systems are not adequately preparing workers for the needs of the evolving job market. Labour market efficiency, which includes factors like ease of hiring and firing, wage determination, and labour mobility, also appears to have remained unchanged, potentially hindering the optimal allocation of human resources in the economy.

This may present itself as a significant obstacle to Nepal's ability to harness its demographic dividend, as a dynamic labour market is essential for absorbing the growing working-age population. The demographic dividend relies on the ability of an economy to productively employ its expanding

workforce. Without improvements in the labour market, Nepal risks missing out on the potential economic benefits of its changing age structure. The country may face increased unemployment or underemployment, particularly among youth, which could lead to social and economic challenges. To address these issues, Nepal may need to focus on policies that stimulate job creation, improve the alignment between education and industry needs, enhance vocational training programs, and increase labour market flexibility. Overcoming these labour market challenges will be crucial for Nepal to fully capitalize on its demographic opportunity and drive sustainable economic growth.

f) Governance and economic institutions

The governance and economic sector employed five key indicators to compute the DDEI for this domain. These indicators were selected to provide a comprehensive assessment of a country's economic environment, governance quality, and overall development status.

The first indicator, the ease of doing business index rank, reflects the regulatory environment for business operations. This measure is crucial as it indicates how conducive a country's regulatory framework is for starting and operating local firms, which in turn affects economic growth and job creation.

The second indicator, the government effectiveness index, assesses the quality of public services, civil service, policy formulation, and implementation. This metric is essential in evaluating a government's capacity to support economic development and implement effective policies.

The third indicator focuses on corruption, measuring the percentage of people who experienced at least one instance requiring a bribe or gift in the past 12 months. This corruption index score provides insights into the prevalence of corruption, which can significantly impact economic efficiency and social trust.

Complementing this, the fourth indicator, good governance for control of corruption, evaluates the effectiveness of anti-corruption measures and the overall integrity of the governance system. This measure is crucial for ensuring a fair and transparent economic environment.

The fifth indicator, GDP per capita (PPP, constant 2021 international $), provides a standardized measure of economic output and living standards. This metric offers a broad view of a country's economic performance and development level.

By incorporating these diverse indicators, the DDEI aims to capture a holistic picture of a country's governance quality and economic environment. This comprehensive approach recognizes that realizing the demographic dividend requires not only economic growth but also effective governance,

transparency, and a business-friendly environment. These factors collectively contribute to creating the conditions necessary for leveraging a country's demographic potential for sustainable development.

The governance and economic institutions sector in Nepal saw a minor improvement from 3.8 to 4.0, representing just a 5.3 percent increase over the decade. This slight uptick suggests that while there have been some positive developments in this area, progress has been slow and limited. The marginal improvement might be attributed to incremental reforms in public administration, modest enhancements in economic policies, or small steps towards greater institutional transparency.

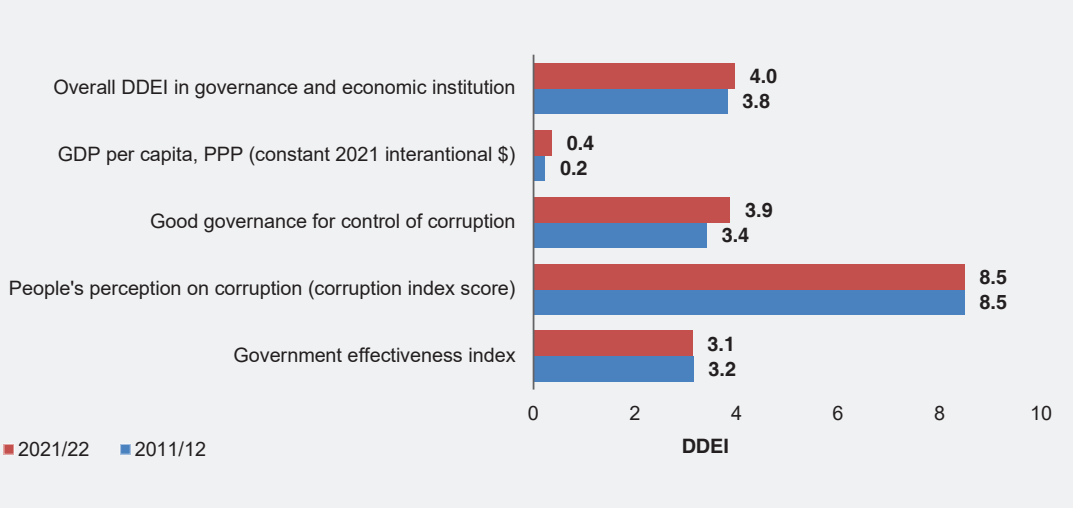
Figure 6.9 presents an analysis of the DDEI scores for the governance and economic institution sector between 2011/12 and 2021/22, along with its corresponding indicators. The overall DDEI score in this sector showed a slight improvement, increasing from 3.8 in 2011/12 to 4.0 in 2021/22, reflecting limited progress in strengthening governance and economic institutions over the decade. Strengthening these areas is crucial for creating a conducive environment to harness the demographic dividend in the country.

Among the indicators, GDP per capita (PPP, constant 2021 international Dollars) showed a slight improvement, with the DDEI score increasing from 0.2 in 2011/12 to 0.4 in 2021/22. However, this remains significantly low, reflecting ongoing challenges in achieving substantial economic growth. The score for good governance also showed small progress, increasing from 3.4 to 3.9 during the period, indicating a lack of adequate progress in enhancing institutional mechanisms to address corruption. Similarly, people's perception of corruption, measured through the corruption index score, remained steady at 8.5, showing no perceived improvement in reducing corruption over the decade.

The government effectiveness index, another critical governance indicator, also showed negative progress, from 3.2 to 3.1 during the period, pointing to persistent inefficiencies in public service delivery and governance frameworks.

Overall, the governance and economic institution sector reflects slow and uneven progress across key indicators. Effective governance and economic institutions are essential for realizing the benefits of the demographic dividend, as they create a conducive environment for economic growth, job creation, and efficient service delivery, enabling the productive population to contribute to sustained national development. To accelerate improvement, there is a need for stronger policy reforms, institutional strengthening, and more transparent governance practices to foster economic growth and better institutional performance.

Figure 6.9: DDEI across governance and economic institution between 2011/12 and 2021/22



The low score and minimal improvement indicate that Nepal faces significant challenges in improving its governance structures and economic institutions. A score of 4.5 out of 10 suggests that there are substantial weaknesses in these critical areas, which could be hampering Nepal's overall development and its ability to capitalize on its demographic dividend. The slow pace of improvement is particularly concerning, as strong governance and robust economic institutions are fundamental to creating an environment conducive to economic growth and social progress.

This could reflect issues such as political instability, corruption, or difficulties in implementing economic reforms. Political volatility may be hindering long-term policy planning and implementation. Corruption could be undermining public trust and efficient resource allocation. Meanwhile, resistance to change or lack of capacity might be impeding necessary economic reforms. To address these challenges, Nepal may need to focus on strengthening its democratic institutions, enhancing transparency and accountability in governance, and implementing comprehensive economic reforms. Improving this sector is crucial, as effective governance and strong economic institutions are essential for Nepal to create the conditions necessary to fully leverage its demographic dividend potential.

Nepal's demographic dividend progress: Uneven gains across sectors

The overall demographic dividend effort index (DDEI) has improved from 5.4 in 2011/12 to 6.0 in 2021/22, reflecting a positive trend in leveraging demographic changes for economic and social benefits. This increase of 0.6 points in a decade represents an 11.1 percent rise in the index, indicating steady progress in harnessing demographic dividends over the past ten years.

This upward shift in the DDEI indicates that some progress has been made in harnessing demographic changes for development. However, the data also highlights a disparity in sector-specific progress. Notably, the maternal and child health sector has experienced a substantial improvement, rising from 6.1 to 8.2. This sector's progress has likely been a major contributor to the overall increase in the DDEI. In contrast, labour market sector has remained unchanged, which suggests that the advancements in the DDEI are not uniformly distributed across all areas.

The overall improvement in the DDEI suggests that while there has been meaningful progress in some areas, there are still challenges in sectors where performance has stagnated. For example, the lack of change in family planning and labour market metrics indicates a need for targeted strategies to address these areas and further leverage the demographic dividend.

The increase in the DDEI is a positive development, demonstrating progress in utilizing demographic shifts for societal benefits. However, achieving a balanced and comprehensive demographic dividend will require continued focus on both advancing successful sectors and addressing stagnation in others. To fully harness its demographic dividend, Nepal will need to address these disparities. This may involve not only maintaining its success in health outcomes but also implementing more effective policies and programs to improve family planning services and create a more dynamic, opportunity-rich labour market. Balancing progress across all relevant sectors will be crucial for Nepal to maximize the potential benefits of its demographic transition.

Nepal's DDEI scores reveal a mixed picture of progress. Significant strides have been made in crucial areas, particularly maternal and child health. However, other equally important sectors have seen minimal or no improvement. This uneven development suggests that Nepal needs a more balanced and comprehensive approach to fully capitalize on its demographic dividend.

CHAPTER 7

ECONOMIC GROWTH POTENTIAL THROUGH DEMOGRAPHIC DIVIDEND

Nepal has the potential for significant economic growth through harnessing its demographic dividend. The country is currently experiencing a youth bulge with a large working-age population relative to dependents – children and the old-age population – and a relatively low dependency ratio of 53.3 dependents (0-14 and 65 and above) per 100 working-age population (15-64). This favourable age structure presents an opportunity to drive economic development if effectively utilized. A low dependency ratio in which fewer non-working individuals rely on a larger workforce creates a favourable environment for economic growth and increases GDP per capita. This demographic shift results in more individuals being employed, earning income and contributing to economic activities, directly enhancing a country's economic output.

7.1 Modelling GDP per capita with the dependency ratio

This section presents the detailed findings of the regression analysis examining the relationship between GDP per capita and the dependency ratio in Nepal over the period 1961-2022. The regression model employed to assess this relationship incorporates the dependency ratio (DPR), a temporal trend (captured by the time variable) and a dummy variable for the year 1995 to account for structural shifts in economic performance.

The resulted final model is:

$$LN\_GDP\_PC=11.43323-0.0179724*DPR+0.01211571*Time+0.1217425*Year\_dummy\_95+\epsilon$$

where,

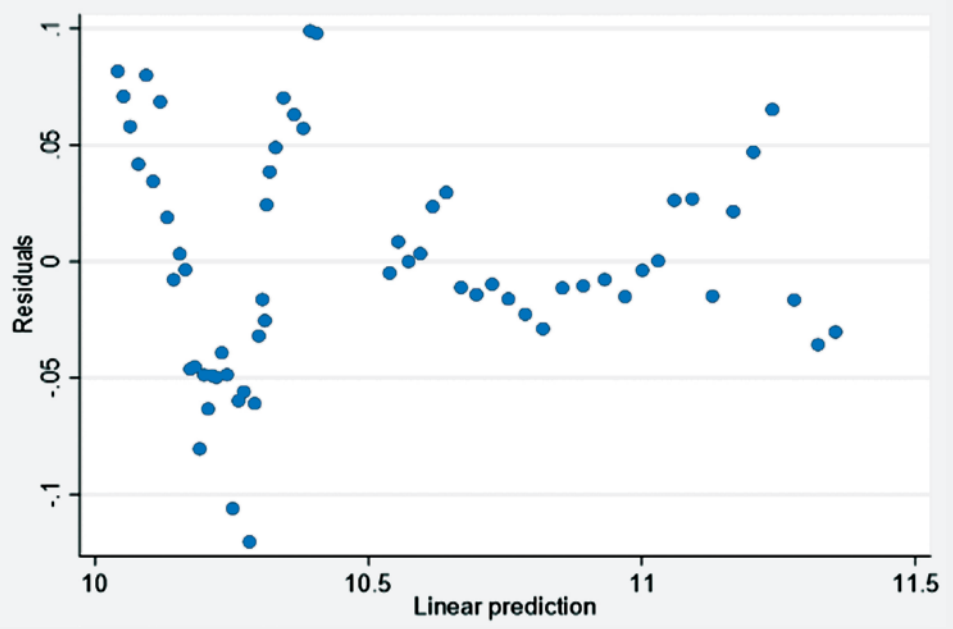
- LN_GDP_PC refers to the natural logarithm of GDP per capita (dependent variable);
- DPR is the dependency ratio (the proportion of dependents to the working-age population);
- Time represents the year variable spanning from 1961 to 2022, Year_dummy_95 is a binary variable indicating the historical shift after 1995, and it aims to account whether political and demographic transitions that have occurred after 1990s have had any effect on country's economic performance; and
- ϵ is the error term.

This model was selected based on its capacity to explain the changes in GDP per capita as influenced by both the direct impact of demographic factors (the dependency ratio) and temporal trends over the studied period.

7.2 Model fit and predictive power

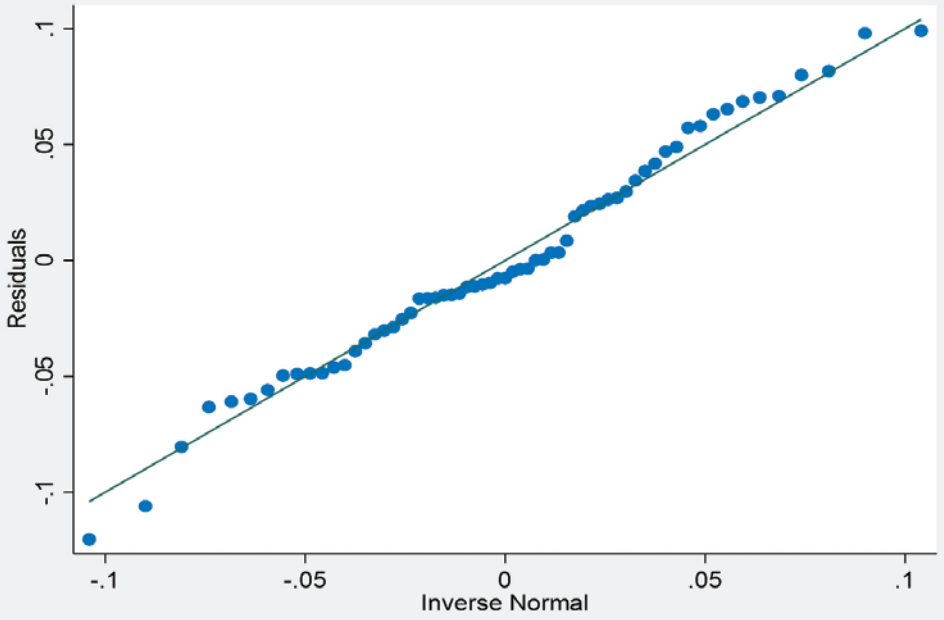
To ensure the validity of the OLS model, several diagnostic tests were conducted, including checks for linearity, normality, multicollinearity, autocorrelation and heteroscedasticity. The linearity assumption was tested by analyzing the residuals against the fitted values, revealing no patterns, thus, confirming a linear relationship between the predictors and the dependent variable (Log GDP per capita). The normality of residuals was assessed using Q-Q plots and the Shapiro-Wilk test, both of which showed that the residuals were approximately normally distributed. Multicollinearity was tested with variance inflation factors (VIF), and the results indicated no significant multicollinearity, ensuring that the regression estimates were reliable.

Figure 7.1: Residuals vs. fitted values: Assessing linearity in the regression model



Source: Based on World Bank data, 1960-2022.

Figure 7.2: Q-Q plot assessing the normality of residuals



Source: Based on World Bank data, 1960-2022.

Further, autocorrelation was checked using the Durbin-Watson and Breusch-Godfrey tests, with the former indicating potential autocorrelation while the latter showed no significant issues. Finally, heteroscedasticity was detected through the Breusch-Pagan/Cook-Weisberg and White's tests, both indicating varying residual variance. Given the findings of autocorrelation and heteroscedasticity, Newey-West standard errors were applied to the model to correct for these issues. This adjustment ensures robust standard errors, making the coefficient estimates more reliable and the inference more accurate, even in the presence of autocorrelation and heteroscedasticity.

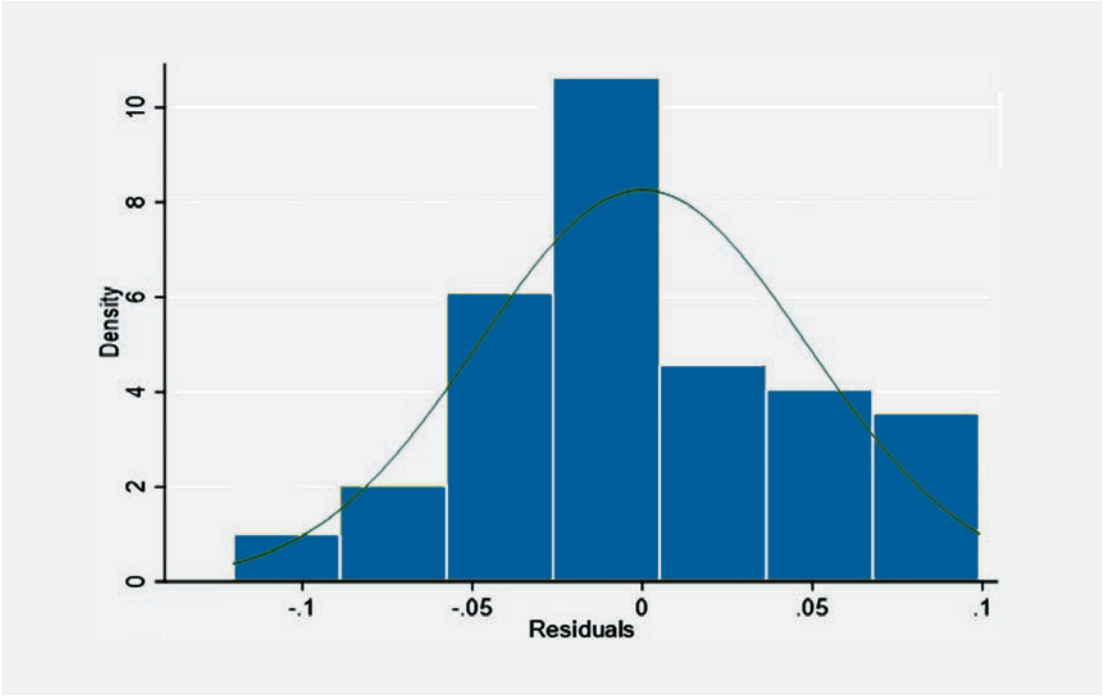
In time series regression, standard errors capture the uncertainty due to potential model misspecification, autocorrelation and other issues, not just the sampling variability. Regardless of whether the data from population census or sampling, it also reflect the potential presence of serial correlation, heteroscedasticity and omitted variable, which are crucial in time series analysis, besides being relevant for assessing the reliability of coefficients and conducting hypothesis tests, e.g. significance of dependency ratio in explaining GDP per capita.

The model's R-squared value of 0.9846 (Annex 14) is indicative of a very high level of explanatory power, suggesting that the variables included in the model – the dependency ratio, time, and the

year dummy for 1995 – successfully capture the main factors influencing GDP per capita in Nepal. With nearly 98.5 percent of the variation in GDP per capita explained by these variables, the model is highly robust and reliable.

This high level of model fit indicates that while external factors, such as global economic conditions, may also influence Nepal's economic performance, the internal factors captured by the model provide a comprehensive explanation for changes in GDP per capita over time. In 1990, Nepal transitioned to democracy with the abolishment of the autocratic *Panchayati* system, a period that also marked the beginning of a significant demographic transition characterized by a sharp decline in fertility rates. To capture the potential structural shift that may have influenced Nepal's economic trajectory, this report has incorporated a year dummy for 1995, thereby enhancing the model's robustness.

Figure 7.3: Histogram and normal probability plot of the residuals



Source: World Bank data, 1960-2022.

7.3 Effects of dependency ratio on GDP per capita

The coefficient for the dependency ratio (DPR) is negative (-0.0179724), which indicates a statistically significant inverse relationship between the dependency ratio and GDP per capita at constant price (Annex 14). This result is in line with the broader economic theory that suggests a higher dependency ratio increases the economic burden on the working-age population, which can reduce overall productivity and economic growth.

A closer examination reveals that for every 1-unit increase in the dependency ratio, GDP per capita at constant prices decreases by approximately 1.8 percent taking other independent variables constant. Conversely, for every 1-unit decrease in the dependency ratio, GDP per capita increases by approximately 1.8 percent. While Nepal's dependency ratio was relatively low at 53.3 dependents per 100 working-age population in 2021, this presents an opportunity to leverage the country's youth bulge for economic development.

With a larger working-age population relative to dependents, Nepal can potentially experience higher economic growth, increased savings and investments, and more substantial tax revenues, all of which can contribute to improved national prosperity. However, it is essential for the government and policymakers to ensure that this opportunity is fully realized through investments in education, healthcare, and job creation, as failure to do so could lead to unemployment, inequality, and a strain on infrastructure and services. Although there has been progress in reducing fertility rates, the growing old-age population presents new economic challenges to future trajectory of Nepal's economic growth.

7.4 Temporal effects on GDP per capita

The positive coefficient for time (0.0121571) suggests that, regardless of demographic shifts, Nepal's GDP per capita has experienced a consistent upward trend over the years. Specifically, each passing year corresponds to a 1.3 percent increase in GDP per capita taking other variables constant (Annexs 14 and 20). This finding indicates that the long-term growth trends have been supported by various factors, including structural economic reforms, increased remittance inflows and improvements in infrastructure.

Nepal's economic growth trajectory reflects a combination of domestic policy changes and external influences. Over the past several decades, Nepal has made some progress in areas such as infrastructure development, financial sector growth and poverty reduction.

Moreover, this temporal effect can be linked to various macro-economic policies introduced over time. The steady rise in GDP per capita can be attributed to the gradual liberalisation of Nepal's economy in the 1990s, the increasing inflow of remittances from the substantial migrant worker population, and the expansion of key sectors like agriculture, services, and manufacturing. The time variable captures the cumulative effects of these changes, reflecting the adaptation and resilience of Nepal's economy in the face of demographic challenges.

7.5 Structural break after 1995: A key turning point

The year 1995 is identified as a crucial turning point in Nepal's economic development. The positive coefficient for the year dummy after 1995 (0.1217425) indicates that GDP per capita increased by approximately 12.9 percent after this year assuming other independent variables' effects constant.

This aligns with significant political and economic reforms introduced during the mid-1990s, including the transition to a multiparty democratic system, the introduction of economic liberalisation policies and the strengthening of external economic relations.

The structural break in 1995 is consistent with broader trends in developing countries that undergo significant political shifts, which often lead to accelerated economic growth. In Nepal's case, the liberalisation of trade and the encouragement of foreign direct investment (FDI) in key sectors likely played a role in boosting the domestic economy. Additionally, the policy focus on infrastructure development, education and rural poverty alleviation programs contributed to a broader economic expansion, which is captured by the year dummy variable.

These findings highlight that a relatively low dependency ratio presents significant opportunities, while poverty, unemployment and inequality pose substantial challenges. As Nepal continues to develop, transformative policies that encourage investment, enhance human capital and promote inclusive growth will be essential to ensuring the country can sustain its upward trajectory and fully harness the demographic dividend.

Nepal's relatively low dependency ratio presents a unique opportunity to capitalize on the demographic dividend. However, the benefits of this opportunity can only be fully realized if the government adopts policies that invest in human capital, foster inclusive growth, create job opportunities and address the challenges emerging by an ageing population. By implementing transformative policies that prioritize quality education and skills training, infrastructure development and social protection, Nepal can sustain its current economic growth and accelerate future progress, ensuring that upcoming generations benefit from today's demographic advantages.

CHAPTER 8

OPPORTUNITIES AND CHALLENGES OF DEMOGRAPHIC DIVIDEND

Nepal's demographic landscape is demonstrated to be undergoing substantial changes. With a declining dependency ratio and a growing working-age population, the country has a unique chance to benefit economically from the demographic dividend. This offers accelerated economic growth potential in Nepal as its working-age population has been growing faster than its dependent population in recent years. However, seizing this opportunity involves overcoming several pressing challenges.

As per 2021 Census, Nepal's population is approximately 29 million, with around 65.2 percent of the population in the working-age group (15–64). The dependency ratio has dropped over the past decades, from 77.2 in 2001 to about 53.3 per hundred persons of the working-age group in 2021, reflecting fewer dependents for each working-age individual. This shift presents a window of economic opportunity but also calls for proactive policies to maximize the dividend and address associated challenges.

8.1 Opportunities

8.1.1 Boosted economic productivity

Nepal's working-age population is growing relatively faster than child and old dependents and this presents a significant opportunity to enhance economic productivity. Data from the National Statistical Office shows that GDP per capita, adjusted to 2010/11 prices, increased from NPR 46,200 in 2001/02 to around NPR 86,700 in 2021/22 (NSO, 2024b). This growth partly reflects the contributions of a larger productive workforce. Expanding access to stable, formal jobs could further boost productivity and per capita income, helping to reduce poverty nationwide.

8.1.2 Human capital development

Nepal's current demographic structure offers a perfect time to invest in education and skill development. According to the Ministry of Education, Science and Technology, the secondary school gross enrollment rate stands at around 83.4 percent, and only 48 percent of the working-age population received technical and vocational training in 2022 (MoEST, 2022). This highlights significant challenges in aligning education and training with the skills needed for available jobs. By investing in technical education and training aligned with high-demand sectors like information technology, tourism, and sustainable agriculture, Nepal can equip its young population with the skills necessary for a competitive workforce.

8.1.3 Increased national savings and investment

The growing working-age population has the potential to increase Nepal's national savings rate. Data from the NSO show that the national savings as a percentage of GDP reached approximately 36.15 percent in 2023/24 (NSO, 2024b). Higher savings rates enable increased investment in infrastructure, health, and education sectors essential for sustained economic growth. By supporting domestic investments, the country can reduce its reliance on external sources of funding, ensuring a stable economic base.

8.1.4 Social stability and middle-class expansion

According to the National Statistics Office, Nepal's poverty rate has declined from 25.2 percent in 2010/11 to 20.3 percent in 2022/23 (NSO, 2024c). With poverty rates declining and more people moving into the middle class, social stability is likely to improve, along with a growing demand for better governance and services. This shift can lead to broader economic and social development, fostering a society with higher standards of living, improved healthcare, and better educational opportunities.

8.2 Challenges

Despite the opportunities presented by Nepal's demographic transition, several challenges must be addressed to fully harness the potential of the demographic dividend while preparing for the socio-economic demands of an ageing population.

8.2.1 Unemployment and underemployment

Although Nepal's working-age population is growing, creating enough quality jobs remains challenging. NSO data shows that unemployment increased to 12.6 percent in 2022/23 from 11.4 percent in 2017/18 (NSO, 2024c). Underemployment is even more prevalent, affecting 22.7 percent of the population, especially among youth aged 15-24. Many young Nepalis seek employment abroad, with remittances to GDP ratio at around 23.0 percent in 2022/23 (2024b). These trends highlight the urgent need for domestic job creation in emerging sectors and industries to retain talent and support the economy sustainably, especially as many engaged in low productivity sectors like subsistence agriculture. Women's workforce participation remains low due to societal norms, inadequate childcare support and workplace discrimination. Failure to address these barriers limits the potential economic gains from a more inclusive labour market. It can therefore be said that, without sufficient job creation, Nepal risks missing out on the economic benefits of its demographic dividend.

8.2.2 Gaps in education and skill alignment

While educational attainment has improved, the quality of education and alignment with labour market demands remain concerns. According to the UNICEF, only about 23.0 percent of secondary school graduates in Nepal had job-ready technical or vocational skills in 2019. Furthermore, 46.0

percent of high school graduates will lack the skills necessary to secure decent employment by 2030. Bridging this skills gap is essential for ensuring that young Nepalis can access stable and meaningful employment, particularly in sectors with potential for growth, such as information technology and renewable energy.

8.2.3 Inequality and regional disparities

Economic development in Nepal has been concentrated in certain regions, particularly urban centers like Kathmandu, leaving rural areas comparatively underdeveloped. The Kathmandu Valley comprises approximately 10.3 percent of Nepal's total population (NSO, 2021) and contributes about 23.4 percent to the country's GDP (MoF, 2015). It is noteworthy that the combined contribution of all urban areas to Nepal's GDP was only 33.1 percent in 2015. This highlights the significant economic role that the Kathmandu Valley plays relative to its population size. This concentration of resources and opportunities exacerbates inequality, as rural populations lack access to the same educational, healthcare, and economic opportunities. Targeted regional development policies are essential to ensure that the benefits of the demographic dividend reach all areas and communities.

8.2.4 Foreign labour migration

Foreign employment has been significantly contributing to Nepal's economy through foreign remittances. Reliance on labour migration presents several risks including brain drain and vulnerability to global economic fluctuations. Many Nepali workers migrate abroad for low-skilled jobs, limiting their earning potential and exposing them to exploitation and job insecurity. Reducing dependence on low-skilled labour migration requires the development of domestic opportunities and the promotion of skills development to align with higher value employment options. By addressing these challenges, Nepal can improve individual livelihoods and strengthen its economy by maximizing benefits of labour migration and minimizing its drawbacks.

8.2.5 Urbanization, infrastructure and industry gaps

The increasing concentration of the working-age population in urban areas places pressure on infrastructure, housing, and public services. Strategic urban planning and investment in infrastructure are critical to ensuring sustainable development. Nepal's economy is heavily reliant on remittances and a few sectors, leaving it vulnerable to external shocks. Diversifying into higher value industries such as technology, manufacturing and renewable energy remains a challenge that must be overcome to sustain long-term growth.

8.2.6 Health care and social services strain

Despite a declining dependency ratio, Nepal's ageing population is on the rise, with individuals aged 65 and above projected to comprise 15.2 percent of the population by 2051 compared to just

6.9 percent in 2021. The healthcare system currently lacks the infrastructure needed to manage the rising demand for old-age population care and chronic disease management. Expanding healthcare services to accommodate the needs of an ageing population is essential to avoid future strain on social services. Nepal will face increased pressures on social security, health care and pension systems with increasing old-age population. The country needs to prepare for this demographic shift by establishing sustainable support mechanisms for the ageing population.

8.2.7 Environmental and resource constraints

Nepal's population growth places significant strain on natural resources including forest, land and water resources. Forests cover approximately 45.0 percent of Nepal's total land, providing both economic and environmental services. Additionally, the country is also rich in water resources with an estimate of around 83,000 MW of hydroelectricity potential. Water resources are under pressure from agricultural and urban demand. Sustainable management practices are vital to ensure that economic development does not lead to the degradation of natural resources. Investments in renewable energy and environmentally responsible agriculture can support growth while preserving Nepal's ecological balance.

In summary, Nepal's demographic dividend offers a promising path toward economic growth and improved standards of living. However, capitalizing on this demographic shift requires a comprehensive strategy that includes education reform, healthcare investment, job creation, social security and regional development. Only by effectively tackling these issues Nepal can maximize the opportunities of its demographic transition of a growing working-age population as an asset and ensure inclusive sustainable development.

CHAPTER 9

CONCLUSION AND POLICY RECOMMENDATIONS

9.1 Conclusion

Nepal is experiencing a stage of demographic dividend as fertility and mortality rates have sharply declined resulting a shift in the age structure of the population in a larger proportion of the working-age population (15–64) compared to dependents. The continued decrease in fertility has reduced the dependency ratio to 53.3 dependents per 100 working individuals as of 2021, enabling households and the government to redirect resources toward education, health, and economic growth. Declining mortality rates especially, that of infants, have further improved overall health and productivity, strengthening the workforce. Internal migration has also influenced this transition and international migration with remittances from Nepali workers abroad also providing a vital economic boost.

Nepal's relatively low dependency ratio can be used to capitalize on its demographic dividend. However, the benefits of this opportunity can only be fully realized if the government adopts policies that invest in human capital, foster inclusive growth, create job opportunities and address the challenges emerging by an ageing population. This demographic transition has created a time-bound opportunity, with a higher proportion of the working-age population relative to dependents projected to last until around 2050. The demographic dividend offers immense potential for economic growth if supported by policies that foster job creation, skills development, and productive investments. However, the transition also poses challenges, particularly the rapid rise in the old-age population (65 years and above) in the coming decades, which will lead to an ageing society.

To seize this opportunity while preparing for future challenges, Nepal must implement a balanced approach. This includes prioritizing investments in education, health care, and social security systems to ensure the working-age population remains productive and the old-age population are adequately supported. Addressing these dynamics effectively will determine Nepal's ability to achieve sustained, inclusive, and long-term development in the years ahead.

With a larger share of the population in the working-age group, which stands around 65.2 percent in 2021, Nepal has a unique chance to boost economic growth by increasing labour force participation. This can be achieved through job creation in key sectors like agriculture, manufacturing and services, alongside fostering entrepreneurship.

The increasing literacy rates, higher educational attainments, labour force participation, GDP and gross savings along with the increase in the demographic dividend index (DDI) and demographic dividend effort index (DDEI) are all positive improvements. These statistics indicate that, by utilizing the demographic shifts, the progress can be achieved in societal benefits through possible economic development.

9.2 Policy recommendations

Nepal's declining dependency ratio along with increasing working-age population offer a unique opportunity to accelerate growth. The government should focus on job creation, skills development, and fostering industries that can absorb the growing workforce. To ensure sustainable development, efforts must focus on sectors that benefit all groups, including dependents and marginalized communities. Investments in education, healthcare and social protection will help ensure everyone contributes to and benefits from economic growth.

The data suggests a need for more focused policies on women's empowerment, governance reform, and labour market development. These areas emerge as critical focal points for Nepal to fully harness its demographic dividend potential. The stagnation or limited progress in these sectors indicates that targeted interventions and policy reforms are necessary to create a more balanced and comprehensive approach to development.

Women's empowerment is particularly crucial, as it intersects with multiple aspects of demographic dividend realisation. Empowering women can lead to improved family planning outcomes, increased labour force participation, and better educational attainment for future generations. Policies that promote gender equality, provide economic opportunities for women, and address cultural barriers to women's advancement should be prioritized.

Governance reform is another key area requiring attention. Effective, transparent, and accountable governance is fundamental to creating an environment conducive to economic growth and social development. This may involve strengthening democratic institutions, improving public service delivery, and implementing anti-corruption measures. Better governance can enhance the effectiveness of policies across all sectors relevant to the demographic dividend.

Labour market development is critical for translating Nepal's potential demographic advantage into economic gains. This requires policies that stimulate job creation, improve the match between education and industry needs, and increase labour market flexibility. Initiatives could include promoting entrepreneurship, attracting foreign investment, and developing sectors with high employment potential.

While maintaining the strong performance in education and building on the success in maternal and child health, Nepal needs to address the stagnation in family planning efforts. The contrast between progress in health outcomes and the lack of advancement in family planning highlights a potential missed opportunity. Improved family planning can contribute to better maternal and child health, women's empowerment, and more effective resource allocation within families and society.

Integrated policies that link improvements in health and education to enhanced labour market outcomes could help Nepal better capitalize on its demographic potential. This approach recognizes

the interconnected nature of development challenges and seeks to create synergies between different sectors. For example, health and education improvements could be more explicitly linked to skills development and job readiness programs. Similarly, family planning initiatives could be integrated with women's economic empowerment programs.

By adopting a more holistic and integrated approach to policymaking, Nepal can address the disparities in progress across different sectors. This strategy would aim to create a virtuous cycle where improvements in one area reinforce and amplify progress in others. Such an approach could help Nepal overcome the current stagnation in key areas and more effectively leverage its demographic dividend for sustainable economic growth and development. If the country can maintain its progress in health and education while significantly improving in the lagging areas, it could be well-positioned to harness its demographic dividend in the coming decades. A balanced development across all sectors is essential for maximizing this potential.

However, the slow progress in governance and economic institutions may pose a risk to sustaining and building upon the gains made in other sectors. Effective governance and robust economic institutions are critical to ensuring that improvements in health and education translate into broader economic benefits. Without these, the potential gains from the demographic dividend might remain unrealized, as has been illustrated.

Based on the analysis of the dependency ratio and its relationship with GDP per capita, the policy implications of for Nepal should be focused on education and skill development expanding access to education and vocational training; youth employment programs including promoting entrepreneurship, supporting small and medium enterprises (SMEs), and attracting investment into high-potential sectors like technology, manufacturing, and services; job creation in rural areas to prevent the migration of youth to urban areas in sectors like agriculture, tourism and renewable energy, where Nepal has significant potential. As Nepal's old-age population grows, it becomes essential to ensure that the working-age population is not burdened by increased pension and healthcare costs. Encouraging active ageing through health and social policies can help extend the working life of older individuals, particularly in less physically demanding jobs. This will help to reduce the actual dependency in the longer term by keeping more people in the labour force as they age.

Structural economic reforms that promote diversification, digital transformation and infrastructure development policies should further be encouraged. Attracting both domestic and foreign investments is key to sustaining growth. Policy measures should focus on improving the ease of doing business and creating a conducive environment for foreign direct investment (FDI). By adopting these recommendations, Nepal can effectively navigate the challenges of its demographic transition, reduce dependence on low skilled foreign employment and lay the foundation for sustainable and inclusive growth.

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ANNEX

Annex 1: Different measures of demographic dividend by districts of Nepal, 2021

District	Working-age (%)	Child dependents (%)	Old-age population (%)	Dependency ratio	Growth rate (%) of population	Growth rate (%) of working-age	Growth rate (%) of child dependents
Taplejung	65.2	27.8	7.0	53.4	-0.53	0.65	-3.20
Sankhuwasabha	64.9	27.0	8.0	54.0	-0.04	1.03	-2.71
Solukhumbu	65.0	26.8	8.2	53.8	-0.09	0.82	-2.58
Okhaldhunga	65.2	25.0	9.8	53.3	-0.56	0.74	-3.95
Khotang	62.9	28.0	9.1	59.0	-1.56	-0.43	-4.34
Bhojpur	64.4	26.8	8.9	55.4	-1.38	-0.44	-3.89
Dhankuta	67.1	24.5	8.4	49.1	-0.78	0.02	-3.34
Tehrathum	66.0	25.6	8.4	51.5	-1.30	-0.36	-3.85
Panchthar	66.1	26.3	7.6	51.3	-1.02	0.02	-3.72
Ilam	69.8	21.7	8.5	43.2	-0.36	0.34	-3.33
Jhapa	67.2	25.1	7.7	48.8	1.97	2.47	0.14
Morang	67.1	25.7	7.2	49.0	1.66	2.23	-0.28
Sunsari	66.4	27.3	6.3	50.5	1.86	2.45	0.09
Udayapur	64.8	28.0	7.1	54.2	0.68	1.81	-2.05
Saptari	62.9	29.8	7.3	59.0	0.96	1.62	-0.97
Siraha	60.3	33.1	6.6	65.8	1.43	2.02	-0.01
Dhanusa	60.0	33.4	6.6	66.7	1.34	1.58	0.36
Mahottari	59.6	34.0	6.4	67.9	1.14	1.81	-0.29
Sarlahi	60.9	32.9	6.2	64.1	1.09	1.88	-0.57
Rautahat	57.5	36.7	5.8	74.1	1.63	2.11	0.68
Bara	61.4	32.7	5.8	62.7	1.00	1.83	-0.74
Parsa	62.2	32.0	5.8	60.8	0.82	1.51	-0.84
Dolakha	65.3	23.7	11.0	53.2	-0.74	0.37	-4.09
Sindhupalchok	65.6	24.2	10.3	52.5	-0.88	0.03	-3.79
Rasuwa	65.7	25.8	8.5	52.2	0.72	1.76	-1.94

District	Working-age (%)	Child dependents (%)	Old-age population (%)	Dependency ratio	Growth rate (%) of population	Growth rate (%) of working-age	Growth rate (%) of child dependents
Dhading	64.9	25.4	9.8	54.2	-0.30	0.77	-3.23
Nuwakot	65.8	24.4	9.8	52.0	-0.50	0.31	-3.09
Kathmandu	74.7	19.7	5.7	33.9	1.51	1.83	-0.29
Bhaktapur	73.4	20.7	5.9	36.2	3.35	3.81	1.61
Lalitpur	73.9	19.3	6.8	35.3	1.57	1.99	-0.50
Kavrepalanchok	69.0	22.5	8.5	44.9	-0.46	0.49	-3.48
Ramechhap	64.8	23.4	11.8	54.4	-1.67	-0.56	-5.30
Sindhuli	65.0	27.8	7.2	53.8	0.12	1.63	-3.17
Makwanpur	67.7	25.7	6.6	47.7	0.99	2.10	-1.80
Chitawan	69.4	23.3	7.3	44.0	2.07	2.76	-0.19
Gorkha	64.5	23.5	12.0	54.9	-0.74	0.26	-3.97
Manang	75.4	15.0	9.6	32.6	-1.39	-0.87	-4.91
Mustang	69.7	21.8	8.5	43.5	0.69	0.70	0.43
Myagdi	64.1	25.8	10.2	56.1	-0.57	0.50	-3.50
Kaski	70.5	22.1	7.4	41.7	1.90	2.67	-0.69
Lamjung	66.3	22.1	11.6	50.9	-0.70	0.32	-4.19
Tanahu	66.9	24.0	9.1	49.5	-0.06	1.11	-3.28
Nawalparasi (East)	67.6	25.2	7.2	48.0	1.85	2.83	-0.80
Syangja	65.9	22.6	11.4	51.6	-1.28	-0.21	-4.80
Parbat	64.9	24.7	10.4	54.1	-1.09	-0.13	-3.97
Baglung	63.0	27.9	9.1	58.7	-0.72	0.22	-3.19
Rukum (East)	62.2	31.1	6.6	60.7	0.63	1.64	-1.53
Rolpa	61.5	32.4	6.1	62.7	0.43	1.73	-1.97
Pyuthan	60.5	32.8	6.7	65.2	0.16	1.66	-2.49
Gulmi	62.7	27.4	9.9	59.6	-1.23	-0.08	-4.11
Arghakhanchi	62.5	28.0	9.4	59.9	-1.05	0.12	-3.83
Palpa	66.6	24.8	8.6	50.2	-0.61	0.56	-3.76
Nawalparasi (West)	66.9	26.3	6.9	49.6	1.47	2.31	-0.83

District	Working-age (%)	Child dependents (%)	Old-age population (%)	Dependency ratio	Growth rate (%) of population	Growth rate (%) of working-age	Growth rate (%) of child dependents
Rupandehi	66.9	27.1	6.0	49.6	2.33	3.19	0.15
Kapilbastu	61.2	32.6	6.2	63.4	1.70	2.41	0.17
Dang	67.3	27.1	5.6	48.6	1.92	3.04	-0.83
Banke	64.7	30.0	5.3	54.6	1.97	2.72	0.20
Bardiya	67.5	26.2	6.3	48.2	0.72	1.66	-1.89
Dolpa	64.8	31.7	3.5	54.4	1.47	2.71	-0.78
Mugu	58.3	37.0	4.7	71.6	1.49	2.26	0.09
Humla	58.5	36.1	5.4	70.9	0.82	1.33	-0.31
Jumla	63.9	32.0	4.1	56.6	0.80	2.06	-1.66
Kalikot	58.2	37.1	4.7	72.0	0.57	1.70	-1.32
Dailekh	59.8	34.3	5.9	67.2	-0.35	0.74	-2.47
Jajarkot	58.5	37.2	4.4	71.1	0.96	2.01	-0.84
Rukum (West)	62.4	32.5	5.2	60.4	0.68	1.92	-1.80
Salyan	63.7	30.7	5.6	57.0	-0.16	1.09	-2.80
Surkhet	64.5	30.2	5.3	55.0	1.61	2.69	-0.73
Bajura	57.7	36.0	6.3	73.3	0.25	1.37	-1.63
Bajhang	57.0	36.2	6.8	75.3	-0.30	0.84	-2.29
Darchula	62.3	30.2	7.5	60.6	0.00	1.21	-2.59
Baitadi	60.2	32.6	7.2	66.1	-0.34	0.79	-2.48
Dadeldhura	61.8	31.3	6.9	61.8	-0.17	1.09	-2.70
Doti	57.2	36.6	6.2	74.8	-0.32	0.60	-1.95
Achham	55.1	37.8	7.0	81.4	-1.13	-0.19	-2.70
Kailali	66.2	27.6	6.2	51.1	1.47	2.44	-1.05
Kanchanpur	65.7	27.9	6.4	52.2	1.24	2.28	-1.34

Source: Calculation from 2021 Census data.

Annex 2: Different measures of demographic dividend by districts of Nepal, 2011

District	Working-age (%)	Child dependents (%)	Old-age population (%)	Dependency ratio	Growth rate (%) of population	Growth rate (%) of working-age	Growth rate (%) of child dependents
Taplejung	57.6	36.7	5.6	73.5	-0.55		
Sankhuwasabha	58.1	35.7	6.2	72.2	-0.03		
Solukhumbu	59.1	34.7	6.2	69.1	-0.17		
Okhaldhunga	57.0	35.6	7.5	75.5	-0.57		
Khotang	55.9	37.3	6.8	79.0	-1.15		
Bhojpur	58.3	34.7	6.9	71.4	-1.07		
Dhankuta	61.7	31.9	6.4	62.1	-0.19		
Tehrathum	59.9	33.4	6.7	67.1	-1.08		
Panchthar	59.3	34.8	5.9	68.7	-0.52		
Ilam	64.9	29.6	5.5	54.1	0.26		
Jhapa	63.8	30.3	5.9	56.7	1.66		
Morang	63.3	31.5	5.3	58.0	1.35		
Sunsari	62.5	32.8	4.7	60.1	1.99		
Udayapur	57.6	37.3	5.1	73.6	0.99		
Saptari	58.7	36.4	4.9	70.4	1.14		
Siraha	56.7	38.5	4.8	76.3	1.07		
Dhanusa	58.5	37.0	4.5	70.9	1.17		
Mahottari	55.6	39.5	4.9	80.0	1.26		
Sarlahi	56.1	39.1	4.8	78.2	1.91		
Rautahat	54.6	40.5	4.8	83.0	2.31		
Bara	56.3	39.3	4.4	77.5	2.07		
Parsa	57.8	38.1	4.1	72.9	1.90		
Dolakha	58.2	33.6	8.2	71.9	-0.91		
Sindhupalchok	59.6	32.7	7.6	67.7	-0.61		
Rasuwa	58.9	34.0	7.0	69.6	-0.33		
Dhading	58.0	34.4	7.6	72.5	-0.08		
Nuwakot	60.4	32.0	7.6	65.5	-0.39		

District	Working-age (%)	Child dependents (%)	Old-age population (%)	Dependency ratio	Growth rate (%) of population	Growth rate (%) of working-age	Growth rate (%) of child dependents
Kathmandu	72.2	23.8	4.0	38.5	4.78		
Bhaktapur	70.0	24.8	5.2	42.8	3.01		
Lalitpur	70.7	23.9	5.3	41.4	3.26		
Kavrepalanchok	62.5	30.8	6.7	60.0	-0.10		
Ramechhap	57.7	34.2	8.1	73.3	-0.47		
Sindhuli	55.5	39.2	5.3	80.0	0.57		
Makwanpur	60.3	34.4	5.3	65.8	0.69		
Chitawan	64.6	29.5	5.9	54.8	2.06		
Gorkha	58.2	32.9	8.9	71.9	-0.61		
Manang	71.5	21.6	6.9	39.9	-3.83		
Mustang	69.6	22.4	8.0	43.7	-1.08		
Myagdi	57.3	35.0	7.7	74.5	-0.07		
Kaski	65.1	28.9	6.0	53.6	2.57		
Lamjung	59.6	31.8	8.7	67.9	-0.55		
Tanahu	59.2	33.6	7.2	68.9	0.25		
Nawalparasi (East)	61.1	33.2	5.7	63.8	NA		
Syangja	59.0	32.7	8.3	69.5	-0.93		
Parbat	58.7	33.4	7.9	70.3	-0.74		
Baglung	57.2	36.0	6.8	75.0	-0.01		
Rukum (East)	56.0	39.0	5.0	78.5	NA		
Rolpa	53.7	41.6	4.7	86.3	0.67		
Pyuthan	51.8	43.2	5.0	93.2	0.71		
Gulmi	55.6	37.0	7.4	79.8	-0.57		
Arghakhanchi	55.3	37.5	7.2	80.8	-0.53		
Palpa	58.9	34.4	6.6	69.7	-0.28		
Nawalparasi (West)	61.2	33.4	5.4	63.3	NA		
Rupandehi	61.1	34.0	4.9	63.7	2.17		
Kapilbastu	56.9	38.3	4.9	75.9	1.71		

District	Working-age (%)	Child dependents (%)	Old-age population (%)	Dependency ratio	Growth rate (%) of population	Growth rate (%) of working-age	Growth rate (%) of child dependents
Dang	59.8	36.1	4.1	67.1	1.78		
Banke	59.8	36.1	4.1	67.3	2.42		
Bardiya	61.2	34.4	4.4	63.4	1.09		
Dolpa	56.9	40.1	3.0	75.7	2.17		
Mugu	53.8	42.8	3.4	86.0	2.30		
Humla	55.5	40.6	3.9	80.2	2.25		
Jumla	56.0	41.4	2.6	78.6	1.97		
Kalikot	51.7	45.2	3.1	93.6	2.60		
Dailekh	53.3	42.8	3.8	87.5	1.50		
Jajarkot	52.4	44.8	2.8	90.9	2.39		
Rukum (West)	54.7	42.1	3.2	82.7	NA		
Salyan	55.9	40.5	3.6	78.8	1.27		
Surkhet	57.6	38.5	3.9	73.5	1.95		
Bajura	51.3	43.9	4.8	94.8	2.15		
Bajhang	50.6	44.5	4.9	97.6	1.56		
Darchula	54.9	39.6	5.5	82.2	0.88		
Baitadi	53.5	40.7	5.8	86.8	0.68		
Dadeldhura	54.2	40.7	5.0	84.4	1.19		
Doti	52.0	43.4	4.6	92.4	0.22		
Achham	50.0	44.6	5.4	100.1	1.07		
Kailali	59.8	35.9	4.3	67.1	2.29		
Kanchanpur	58.9	36.5	4.5	69.6	1.77		

Source: Calculation from 2011 Census data.

Annex 3: Different measures of demographic dividend by geographic regions of Nepal and wealth quintile, 2011

Area	Working-age population (%)	Child dependents (%)	Old-age population (%)	Dependency ratio	Growth rate (%) of population	Growth rate (%) of working-age population	Growth rate (%) of child dependents
Nepal	59.8	34.9	5.3	67.2	1.35	2.04	0.79
Male	57.9	36.7	5.4	72.8	1.05		
Female	61.6	33.2	5.1	62.2	1.63		
Urban-rural municipality							
Urban municipality	61.7	33.3	5.0	62.1	5.68	6.00	5.86
Rural municipality	56.6	37.7	5.7	76.7	-3.37	-2.73	-3.93
Urban-rural area							
Urban	66.5	29.1	4.4	50.4			
Peri-urban	59.0	35.8	5.1	69.4			
Rural	56.7	37.4	5.9	76.4			
Ecological belt							
Mountain	56.1	38.2	5.7	78.2	0.54	1.09	0.63
Hill	60.8	33.5	5.7	64.5	1.06	1.91	0.32
Tarai	59.5	35.7	4.8	68.1	1.72	2.29	1.21
Province							
Koshi	61.5	32.9	5.7	62.7			
Madhesh	56.8	38.6	4.6	76.1			
Bagmati	65.5	28.9	5.6	52.7			
Gandaki	60.3	32.5	7.2	65.9			
Lumbini	58.6	36.3	5.1	70.5			
Karnali	54.9	41.6	3.5	82.0			
Sudurpashchim	55.7	39.5	4.8	79.6			
Wealth quintile							
Lowest	53.1	41.5	5.4	88.2	NA	NA	NA
Lower	56.3	38.6	5.2	77.7	NA	NA	NA
Middle	58.7	35.7	5.6	70.4	NA	NA	NA
Higher	62.6	32.0	5.4	59.7	NA	NA	NA
Highest	68.7	26.4	4.9	45.5	NA	NA	NA

Note: Growth rates of working-age and child dependents are based on interpolation of 1991 and 2011 figures by age and then adjusted to total estimated population of 2001 Census.

Sources: Calculations from 2011 Census data.

Annex 4: Different measures of demographic dividend by some selected countries, 2011-2024

Country	Working-age population (%), 2023	Child dependents (%), 2024	Old-age population (%), 2023	Dependency ratio, 2020	Growth rate (%) of population, 2024	Growth rate (%) of working-age population, 2011-2021	Growth rate (%) of child dependents, 2011-2021
Nepal (2021 Census)*	65.2	27.8	6.9	53.3	0.92	1.75	-1.25
Nepal	53.2	28	6.4	53.0	0.70	1.45	-1.84
India	47.0	25	6.9	48.7	0.72	1.67	-1.76
Bangladesh	46.6	28	6.3	47.0	0.89	1.33	-1.44
Pakistan	68.0	37	4.2	64.4	1.86	1.83	-0.40
Sri Lanka	52.3	25	11.7	53.7	0.39	0.37	-0.95
Bhutan	38.7	21	6.4	45.1	0.95	1.65	-2.40
Maldives	36.6	20	4.4	30.2	-0.20	3.85	-1.80
Afghanistan	82.6	43	2.4	80.1	2.22	3.89	-0.90
China	45.0	18	14.3	42.2	0.23	-0.02	-0.42
Japan	71.0	11	29.6	69.0	-0.43	-0.88	-0.98
South Korea	42.1	11	18.3	39.5	0.21	0.18	-2.91
Iraq	68.7	40	3.4	69.9	1.99	3.38	-0.76
Iran	45.3	22	7.9	45.6	0.88	0.88	0.09
UAE	20.6	16	1.7	19.2	0.60	3.00	-0.19
Saudi Arabia	40.2	25	2.8	39.3	1.68	2.25	-0.65
Kuwait	34.4	18	3.0	32.4	1.10	3.42	-1.12
Qatar	20.9	14	1.6	18.1	0.71	4.12	0.93
USA	54.5	18	17.4	59.3	0.67	0.34	-0.77
Canada	53.7	15	19.4	51.2	0.71	0.58	-0.42
UK	57.9	17	19.2	57.1	0.45	0.23	0.05

Country	Working-age population (%), 2023	Child dependents (%), 2024	Old-age population (%), 2023	Dependency ratio, 2020	Growth rate (%) of population, 2024	Growth rate (%) of working-age population, 2011-2021	Growth rate (%) of child dependents, 2011-2021
France	64.0	17	21.8	62.4	0.20	-0.05	-0.73
Germany	58.1	14	22.8	55.4	-0.12	0.07	0.20
Spain	52.0	14	20.7	52.4	0.12	-0.09	-0.76
Italy	57.9	12	24.2	57.0	-0.08	-0.29	-1.05
Russia	50.9	17	16.6	51.2	-0.49	-0.67	1.42
Australia	54.4	18	17.4	55.1	1.13	1.03	-0.30
Brazil	43.3	20	10.6	43.5	0.61	0.81	-1.69
Argentina	53.4	24	12.2	55.8	0.79	0.96	-0.93
South Africa	51.9	28	6.5	52.2	1.07	1.72	-0.90
Egypt	60.1	32	5.0	64.6	1.49	1.96	-0.21
Nigeria	84.3	41	3.0	86.0	2.52	2.82	-0.47
Ghana	67.4	36	3.6	67.4	2.15	2.54	-0.56
Kenya	67.0	37	2.9	69.8	2.06	2.91	-1.16
Morocco	52.2	26	7.8	52.4	0.84	1.20	-0.81
Cameroon	80.5	41	2.8	81.1	2.71	3.14	-0.31

**Calculated from 2011 and 2021 Census data of Nepal.*

Sources: Calculations from 2011 and 2021 Census data; CIA The World Factbook, 2020, 2024; UN Population Division, 2022, 2023; PRB, 2024.

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Annex 5: Dependency ratio of some selected countries, 1980-2050

Country	Year					Year (projected)	
	1980	1990	2000	2010	2024	2030	2050
Nepal	79.8	82.4	81.0	68.7	53.7	49.5	44.0
India	77.8	74.2	66.6	56.9	46.6	44.8	48.1
Bangladesh	93.2	85.9	68.9	62.0	52.6	51.1	49.3
Pakistan	87.2	90.4	87.8	75.5	69.4	63.7	54.5
Sri Lanka	69.1	61.7	49.7	48.9	51.8	52.4	60.3
Bhutan	82.9	84.3	73.5	52.8	37.7	34.1	44.0
Afghanistan	94.5	99.7	109.6	103.1	82.8	76.3	57.6
China	68.0	51.8	46.1	37.2	44.2	43.8	69.1
Japan	48.2	43.2	46.7	57.4	70.1	71.0	95.0
South Korea	60.9	44.3	39.0	37.7	42.5	50.4	90.5
UAE	40.1	44.1	28.4	22.4	21.8	22.3	25.3
Saudi Arabia	86.1	81.7	68.1	42.9	36.6	36.0	39.4
Kuwait	68.6	60.9	44.8	33.0	27.1	26.4	32.1
Qatar	45.5	39.0	32.8	17.3	20.1	20.6	26.2
USA	50.3	51.2	50.0	48.2	54.4	57.8	64.0
Canada	47.4	47.0	46.5	44.2	53.6	58.5	64.3
UK	56.2	53.9	53.4	51.7	57.9	58.1	65.9
France	57.0	51.8	53.7	54.6	63.0	65.4	75.8
Germany	51.6	44.8	47.3	52.1	59.0	67.0	76.7
Spain	59.0	50.0	45.7	46.7	51.7	56.1	90.7
Italy	55.0	45.8	48.1	52.7	57.5	63.3	91.3
Russia	46.7	49.0	43.6	38.6	52.6	53.4	65.3
Australia	53.5	49.5	49.5	48.4	55.2	58.0	65.4
Brazil	72.2	65.6	53.9	45.7	44.3	46.3	59.1
Argentina	61.8	64.1	60.8	56.5	51.6	46.6	54.8
South Africa	80.9	71.5	65.7	53.0	48.3	49.1	48.8
Egypt	82.5	81.2	69.4	60.8	59.0	53.6	52.5
Nigeria	91.5	94.1	87.9	90.2	78.8	70.2	54.9
Ghana	95.5	91.9	83.2	73.9	65.4	60.5	55.5
Kenya	115.5	105.6	93.4	84.2	66.1	60.2	51.2
Morocco	88.7	76.2	62.2	52.4	51.0	49.7	54.5
Cameroon	94.0	99.2	93.2	87.7	79.3	73.8	60.3

Sources: World Bank, 2024.
https://www.worldeconomics.com/Demographics/Age-Dependency-Ratio-Total/India.aspx#:~:text=India's%20Age%20Dependency%20Ratio%3A%20Total&text=India's%20age%20dependency%20ratio%20for,people%20and%20greater%20political%20stability.

Annex 6: Mean and median age of population by geographic regions of Nepal, 2011-2021

Area	2011		2021	
	Mean age	Median age	Mean age	Median age
Nepal	26.3	22	29.4	26
Urban-rural municipality				
Urban municipality	27.2	24	26.9	26
Rural municipality	26.1	21	29.2	25
Urban-rural area				
Urban	26.8	24	29.9	27
Peri-urban	26.0	21	28.6	25
Rural	26.2	20	30.1	26
Ecological belt				
Mountain	25.9	20	29.2	25
Hill	26.9	22	30.7	27
Tarai	25.8	21	28.5	25
Province				
Koshi	27.3	23	30.7	28
Madhesh	25.1	20	27.0	23
Bagmati	27.8	24	31.6	29
Gandaki	28.2	23	32.3	29
Lumbini	25.7	20	28.8	25
Karnali	23.4	18	26.5	22
Sudurpashchim	24.4	19	28.0	24
Wealth quintile				
Lowest	25.0	18	28.6	23
Lower	25.3	20	28.8	24
Middle	26.2	21	29.1	25
Higher	26.8	22	28.5	25
Highest	28.3	25	32.2	30

Source: Calculations from 2011 and 2021 Census data.

Annex 7: Mean age at first marriage of population by geographic regions of Nepal and wealth quintile, 2011-2021

Area	2011			2021		
	Male	Female	Both sexes	Male	Female	Both sexes
Nepal	20.74	17.54	18.95	21.64	18.51	19.90
Urban-rural municipality						
Urban municipality	22.54	18.45	20.35	21.97	18.63	20.11
Rural municipality	20.33	17.35	18.65	20.99	18.27	19.48
Urban-rural area						
Urban	22.23	18.36	20.15	22.95	19.32	20.97
Peri-urban	19.92	16.95	18.27	21.07	18.02	19.37
Rural	20.65	17.66	18.93	21.21	18.44	19.65
Ecological belt						
Mountain	20.69	17.98	19.21	21.14	18.69	19.83
Hill	21.48	18.05	19.53	22.19	19.00	20.42
Tarai	20.14	17.03	18.42	21.27	18.11	19.51
Province						
Koshi	22.10	18.44	20.04	22.86	19.28	20.88
Madhesh	19.30	16.54	17.81	20.39	17.35	18.72
Bagmati	21.80	18.36	19.94	22.66	19.44	20.93
Gandaki	21.82	17.88	19.42	22.51	18.87	20.40
Lumbini	19.89	16.97	18.22	21.00	18.20	19.41
Karnali	19.96	17.39	18.56	20.32	18.10	19.10
Sudurpashchim	19.95	16.89	18.20	20.66	17.84	19.04
Wealth quintile						
Lowest	20.03	17.31	18.52	20.53	17.97	19.10
Lower	19.88	17.17	18.36	20.87	18.13	19.33
Middle	20.14	17.26	18.48	21.10	18.15	19.44
Higher	20.70	17.36	18.80	21.91	18.61	20.05
Highest	22.85	18.63	20.52	23.58	19.62	21.39

Source: Calculations from 2011 and 2021 Census data.

Annex 8: Crude death rate (CDR) and infant mortality rate (IMR) over the years, 1953-2022

Year	CDR	IMR (Male)	IMR (Female)	IMR (both sexes)
1953-61	27.0	-	-	-
1954	36.7	260	250	-
1961	22.0	-	-	-
1961-1971	21.4	200	186	-
1965-1966	-	-	-	152
1969	-	-	-	156
1971	-	-	-	172
1971-1981	13.5	-	-	-
1973-1974	-	-	-	171
1974-1975	19.5	141	123	133
1976	22.2	128	138	134-152
1977-1978	17.1	110	98	104
1978	-	147	142	144
1979	-	-	-	90-123
1981	13.5	136	111	117
1983-1984	-	117	98	108
1984	10.9	-	-	103-127
1986-1987	16.1	-	-	107
1988	-	-	-	80-107
1989	-	-	-	102
1991	13.3	94	101	97
1993-1996 (1993)	-	-	-	79-90
1996	11.6	-	-	-
1998-2001 (1998)	-	-	-	64
1999	10.3	-	-	-
2001	10.3	-	-	64
2003-2006	-	-	-	48
2008-2011	-	-	-	46
2011	7.3	44	39	41
2013-2016	-	-	-	32
2019-2022	-	-	-	28
2021	6.8	19	15	17

Sources: NSO (2024a); MoHP et al. (2023, 2012, 2007); MoH et al. (2017); United Nations Population Fund (2017); Central Bureau of Statistics (2014, 2003, 1995); Regmi & Dangol (2004); Pradhan et al. (1997); MoHP et al. (1993, 1987).

Annex 9: Percentage distribution of household with absentee and population absentee by sex by geographic regions of Nepal, 2021

Area	Household with absentee	Population absentee						
		Male		Female		Both sexes		
	2011	2021	2011	2021	2011	2021	2011*	2021
Nepal	24.5	23.4	13.1	12.6	1.7	2.6	7.3	7.5
Urban-rural municipality								
Urban municipality	19.1	23.3	9.9	12.6	2.6	2.9	1.7	7.6
Rural municipality	26.9	23.4	13.8	12.8	1.6	2.2	16.8	7.3
Ecological belt								
Mountain	19.0	16.4	9.5	6.5	2.5	9.4	5.9	3.8
Hill	27.6	23.5	15.8	8.4	2.2	13.8	8.7	3.4
Tarai	24.1	24.1	11.3	6.9	1.2	12.1	6.2	1.9
Province								
Koshi	27.7	22.7	14.7	11.9	1.7	2.2	7.9	6.9
Madhesh	19.2	21.8	8.0	9.5	0.2	0.4	4.2	5.0
Bagmati	18.1	18.1	9.0	9.2	2.3	3.8	5.6	6.5
Gandaki	40.0	31.4	26.5	20.5	2.5	3.6	13.4	11.6
Lumbini	32.3	27.0	17.2	15.0	1.8	2.0	9.1	8.2
Karnali	15.9	17.1	7.6	9.4	1.1	2.0	4.3	5.6
Sudurpashchim	27.9	29.8	15.2	20.1	3.1	6.2	8.9	12.7

**Denominator includes absentee population whose sex is not stated.*

Sources: Calculations from 2021 and 2011 Census data.

Annex 10: Educational attainment by geographic regions of Nepal and wealth quintile, 2011

Area	Below secondary			Secondary or above		
	Male	Female	Both sexes	Male	Female	Both sexes
Nepal	74.0	82.7	78.5	26.0	17.3	21.5
Urban-rural municipality						
Urban municipality	53.1	63.9	58.4	46.9	36.1	41.6
Rural municipality	78.7	86.4	82.8	21.3	13.6	17.2
Urban-rural area						
Urban	78.1	86.4	82.3	21.9	13.6	17.7
Peri-urban	81.6	88.1	85.1	18.4	11.9	14.9
Rural	55.9	66.5	61.1	44.1	33.5	38.9
Ecological belt						
Mountain	81.2	90.1	85.8	18.8	09.9	14.2
Hill	69.9	79.0	74.7	30.1	21.0	25.3
Tarai	76.5	84.9	80.8	23.5	15.1	19.2
Province						
Koshi	73.0	79.3	76.3	27.0	20.7	23.7
Madhesh	79.8	90.5	85.1	20.2	09.5	14.9
Bagmati	63.1	72.8	68.0	36.9	27.2	32.0
Gandaki	71.8	79.6	76.1	28.2	20.4	23.9
Lumbini	78.4	85.3	82.0	21.6	14.7	18.0
Karnali	80.7	89.9	85.4	19.3	10.1	14.6
Sudurpashchim	78.4	89.0	84.0	21.6	11.0	16.0
Wealth quintile						
Lowest	92.3	96.0	94.2	7.7	04.0	05.8
Lower	86.5	92.5	89.6	13.5	07.5	10.4
Middle	79.5	87.1	83.6	20.5	12.9	16.4
Higher	67.5	78.2	73.1	32.5	21.8	26.9
Highest	44.5	57.3	51.0	55.5	42.7	49.0

Source: Calculations from 2011 Census data.

Annex 11: Demographic dividend index by districts of Nepal, 2011-2021

Area	Year		Area	Year	
District	2011	2021	District	2011	2021
Taplejung	70.04	78.11	Kaski	76.55	82.17
Sankhuwasabha	65.40	77.26	Lamjung	69.51	79.21
Solukhumbu	68.12	78.92	Tanahu	67.11	78.33
Okhaldhunga	70.21	77.23	Nawalparasi (East)	70.32	76.83
Khotang	70.57	79.54	Syangja	77.34	81.86
Bhojpur	70.99	77.61	Parbat	73.37	78.52
Dhankuta	74.06	80.56	Baglung	68.17	75.36
Tehrathum	76.16	80.60	Rukum (East)	58.90	72.20
Panchthar	74.03	78.84	Rolpa	52.44	68.27
Ilam	77.20	80.72	Pyuthan	58.61	68.88
Jhapa	73.47	77.38	Gulmi	68.85	72.93
Morang	68.67	73.67	Arghakhanchi	69.73	73.62
Sunsari	67.05	71.59	Palpa	71.68	79.39
Udayapur	70.57	74.15	Nawalparasi (West)	62.18	70.75
Saptari	61.49	66.98	Rupandehi	63.01	72.54
Siraha	55.70	63.74	Kapilbastu	53.53	64.31
Dhanusha	53.55	60.58	Dang	64.40	74.38
Mahottari	50.05	60.39	Banke	57.94	66.42
Sarlahi	49.71	60.96	Bardiya	63.15	73.65
Rautahat	46.17	57.22	Dolpa	58.01	69.71
Bara	50.72	62.80	Mugu	61.80	71.80
Parsa	52.33	65.92	Humla	54.94	71.38
Dolakha	70.56	80.38	Jumla	55.00	72.99
Sindhupalchok	68.44	77.11	Kalikot	59.29	77.13
Rasuwa	66.32	74.72	Dailekh	61.89	74.77

Area	Year		Area	Year	
District	2011	2021	District	2011	2021
Dhading	66.11	76.61	Jajarkot	57.90	74.13
Nuwakot	69.17	76.34	Rukum (West)	60.91	72.59
Kathmandu	80.32	85.18	Salyan	60.90	73.24
Bhaktapur	81.70	83.71	Surkhet	63.13	74.56
Lalitpur	79.95	83.85	Bajura	56.43	75.19
Kavrepalanchok	74.39	80.42	Bajhang	55.64	73.22
Ramechhap	73.13	78.09	Darchula	63.44	74.37
Sindhuli	64.20	75.00	Baitadi	63.43	76.42
Makwanpur	65.10	72.95	Dadeldhura	65.11	75.16
Chitawan	73.73	78.23	Doti	55.86	71.28
Gorkha	67.54	77.27	Achham	59.55	74.56
Manang	73.46	75.61	Kailali	64.28	74.36
Mustang	70.59	76.60	Kanchanpur	67.74	76.82
Myagdi	66.97	78.39			

Source: Calculations from 2011 and 2021 Census data.

Annex 12: Demographic Dividend Effort Index (DDEI), Nepal, 2021

Sector	Indicator	Actual Value	Max. value	Min. value	Progress direction	DDEI	Sector DDEI
Family planning	Contraceptive Prevalence Rate-modern methods (%)	43.0	100	0	+	4.3	5.1
	Unmet Need for Family Planning (%)	21.0	50	0	-	5.8	
Maternal and child health	Maternal Mortality Rate	151.0	1,000	0	-	8.5	8.2
	Under-5 Mortality Rate	33.0	150	0	-	7.8	
	Infant Mortality Rate	28.0	103	0	-	7.3	
	Proportion of the target population covered by all vaccines included in their national programme	94.4	100	0	+	9.4	
	Antenatal care coverage- at least 4 visits (%)	80.5	100	0	+	8.1	
	Proportion of institutional deliveries (%)	79.0	100	0	+	7.9	
Education	Primary School Net Enrollment Rate (%)	97.1	100	0	+	9.7	8.2
	Net enrollment at secondary school, both sexes	47.6	100	0	+	4.8	
	Literacy Rate (15-24 years)	83.8	100	0	+	8.4	
	Gender Parity Index (GPI) in Primary Education	0.99	1	0	+	9.9	
Women's Empowerment	Female Labour Force Participation Rate (%)	24.4	100	0	+	2.4	4.6
	Women in National Parliament (%)	33.1	50	0	+	6.6	
	Women's share in property (house or land) in the household (%)	23.8	50	0	+	4.8	
Labour Market	Youth Employment Rate aged 15-24 years (%)	22.7	100	0	+	2.3	5.5
	Unemployment Rate aged 15 years and above (%)	12.6	100	0	-	8.7	

Sector	Indicator	Actual Value	Max. value	Min. value	Progress direction	DDEI	Sector DDEI
Governance and Economic Institutions	Government Effectiveness Index	-0.93	2.5	-2.5	+	3.1	4.0
	People's perception on corruption (% of people with at least one instance in the past 12 months that require to give a bribe/present) (Corruption index score)	15.0	100	0	-	8.5	
	Good governance for control of corruption	-0.56	2.5	-2.5	+	3.9	
	GDP per Capita, PPP (constant 2021 international $)	4,633.6	100,000	1,000	+	0.4	
	Overall DDEI						6.0

Sources: https://data.worldbank.org/indicator/IC.BUS.DFRN.XQ?skipRedirection=true&view=map; https://databank.worldbank.org/reports.aspx?Report_Name=WGI-Table&Id=ceea4d8b#advancedDownloadOptions; https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.KD?locations=NP;

Annex 13: Demographic Dividend Effort Index (DDEI), Nepal, 2011

Sector	Indicator	Actual Value	Max. value	Min. value	Progress direction	DDEI	Sector DDEI
Family planning	Contraceptive Prevalence Rate-modern methods (%)	43.0	100	0	+	4.3	4.5
	Unmet Need for Family Planning (%)	27.0	50	0	-	4.6	
Maternal and child health	Maternal Mortality Rate	239.0	1,000	0	-	7.6	6.1
	Under-5 Mortality Rate	54.0	150	0	-	6.4	
	Infant Mortality Rate	46.0	103	0	-	5.5	
	Proportion of the target population covered by all vaccines included in their national programme	87.9	100	0	+	8.8	
	Antenatal care coverage- at least 4 visits (%)	50.0	100	0	+	5.0	
	Proportion of institutional deliveries (%)	35.0	100	0	+	3.5	
Education	Primary School Net Enrollment Rate (%)	99.0	100	0	+	9.9	8.3
	Net enrollment at secondary school, both sexes	47.4	100	0	+	4.7	
	Literacy Rate (15-24 years)	84.8	100	0	+	8.5	
	Gender Parity Index (GPI) in Primary Education	1.0	1	0	+	10.0	
Women's Empowerment	Female Labour Force Participation Rate (%)	24.0	100	0	+	2.4	4.3
	Women in National Parliament (%)	33.0	50	0	+	6.6	
	Women's share in property (house or land) in the household (%)	19.7	50	0	+	3.9	
Labour Market	Youth Employment Rate aged 15-24 years (%)	19.7	100	0	+	2.0	5.5
	Unemployment Rate aged 15 years and above (%)	10.7	100	0	-	8.9	

Sector	Indicator	Actual Value	Max. value	Min. value	Progress direction	DDEI	Sector DDEI
Governance and Economic Institutions	Government Effectiveness Index	-0.92	2.5	-2.5	+	3.2	4
	People's perception on corruption (% of people with at least one instance in the past 12 months that require to give a bribe/present) (Corruption index score)	15.0	100	0	-	8.5	
	Good governance for control of corruption	-0.79	2.5	-2.5	+	3.9	
	GDP per Capita, PPP (constant 2021 international $)	3,341.3	100,000	1,000	+	0.2	
	Overall DDEI						5.4

Sources: https://data.worldbank.org/indicator/IC.BUS.DFRN.XQ?skipRedirection=true&view=map; https://databank.worldbank.org/reports.aspx?Report_Name=WGI-Table&Id=ceea4d8b#advancedDownloadOptions; https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.KD?locations=NP;

Annex 14: Regression analysis of GDP with dependency ratio and time period, Nepal, 1960-2022

```
. reg Log_GDP_PC DPR time Year_dummy_95

      Source |       SS           df       MS      Number of obs   =        63
-------------+----------------------------------   F(3, 59)        =   1258.08
       Model |  9.24719456         3  3.08239819   Prob > F        =    0.0000
    Residual |  .144554752        59  .002450081   R-squared       =    0.9846
-------------+----------------------------------   Adj R-squared   =    0.9838
       Total |  9.39174932        62  .151479828   Root MSE        =     .0495

------------------------------------------------------------------------------
      Log_GDP_PC |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----------------+------------------------------------------------------------
             DPR |   -.0179724   .0011448   -15.70   0.000    -.0202631   -.0156816
            time |    .0121571   .0007175    16.94   0.000     .0107215    .0135928
Year_dummy_95 |    .1217425   .0246414     4.94   0.000     .0724352    .1710498
           _cons |   11.43323   .0973105   117.49   0.000     11.23851    11.62795
------------------------------------------------------------------------------
```

Annex 15: Shapiro-Wilk test for normal distribution of data, Nepal, 1960-2022

```
. swilk res

                    Shapiro-Wilk W test for normal data

    Variable |        Obs       W           V         z       Prob>z
-------------+-------------------------------------------------------
         res |         63    0.98296       0.963    -0.081    0.53230
```

Annex 16: Variance inflation factor (VIF) of independent variables for multicollinearity test, Nepal, 1960-2022

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
        time |      4.38    0.228479
Year_dumm~95 |      3.82    0.261531
         DPR |      1.96    0.510187
-------------+----------------------
    Mean VIF |      3.39
```

Annex 17: Durbin-Watson d-statistic for autocorrelation check, Nepal, 1960-2022

```
. estat dwatson

Durbin-Watson d-statistic(  4,    63) =  .4016423
```

Annex 18: Breusch-Pagan/Cook Weisberg test for heteroscedasticity, Nepal, 1960-2022

```
. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of Log_GDP_PC

         chi2(1)      =     7.43
         Prob > chi2  =   0.0064
```

Annex 19: White's test for heteroscedasticity, Nepal, 1960-2022

```
. estat imtest

Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	28.55	8	0.0004
Skewness	0.32	3	0.9565
Kurtosis	0.66	1	0.4176
Total	29.52	12	0.0033

Annex 20: Newey-West standard errors of regression analysis of GDP with dependency ratio and time period, Nepal, 1960-2022

```
. newey Log_GDP_PC DPR time Year_dummy_95, lag(1)

Regression with Newey-West standard errors      Number of obs     =         63
maximum lag: 1                                  F(  3,        59) =     986.00
                                                Prob > F          =     0.0000
```

Log_GDP_PC	Coef.	Newey-West Std. Err.	t	P>|t|	[95% Conf.	Interval]
DPR	-.0179724	.0012745	-14.10	0.000	-.0205226	-.0154221
time	.0121571	.0012661	9.60	0.000	.0096236	.0146906
Year_dummy_95	.1217425	.0352406	3.45	0.001	.0512262	.1922588
_cons	11.43323	.1198852	95.37	0.000	11.19334	11.67312

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