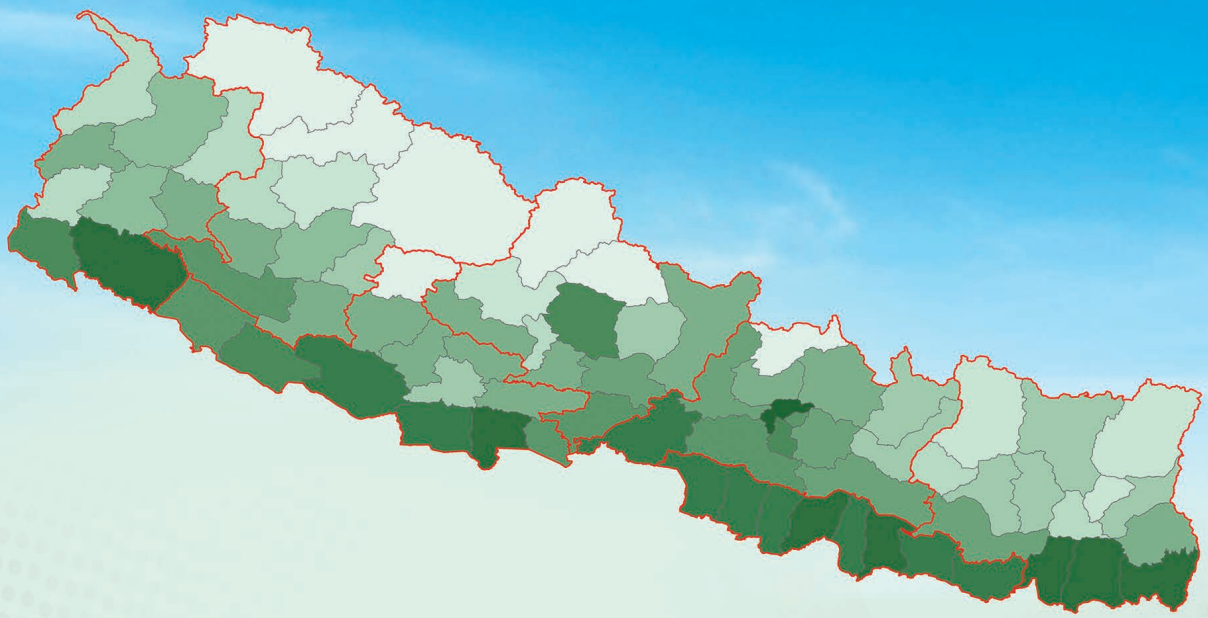
Thematic Report- XV

National Population and Housing Census 2021

Urbanization and Development in Nepal



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

MY CENSUS
MY PARTICIPATION
NATIONAL POPULATION CENSUS 2021

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Recommended citation:

National Statistics Office. 2025. *Urbanization and Development in Nepal*. Kathmandu: National Statistics Office. (National Population and Housing Census 2021)

National Population and Housing Census 2021

Urbanization and Development in Nepal

Published by:
National Statistics Office
Thapathali, Kathmandu
Tel: 5365323, 5341801, 5328406, 5345946 (47, 48) Fax No.: 977-1-5327720
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Published Year: 2025

First Edition: 500 copies

ISBN: 978-9937-9888-1-0

Cover Map : Population distribution by district, NPHC 2021

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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.

The NSO is committed to serving as the central provider of high-quality official statistics to support informed decision-making. In the past, the former Central Bureau of Statistics (CBS) published population monographs following the release of all statistical results. This time, however, 21 thematic reports will be published, each focusing on key sectors of the national development plan.

I am pleased to present the analytical report *Urbanization and Development in Nepal*. This report explores how urbanization is evolving across the country, how it shapes people's lives, and what consequences it brings for the economy, environment, land use, infrastructure, and public services. It highlights critical indicators of urban growth and offers insights into challenges such as unplanned settlements, pressure on urban facilities, and environmental degradation. The analysis aims to inform policymakers and stakeholders in designing evidence-based strategies for inclusive, resilient, and sustainable urban development.

I extend my appreciation to all contributors for their dedication in bringing this important analysis to light. I am confident that these findings will guide policymakers and planners in shaping development strategies for a more prosperous and sustainable future.

I would like to specifically 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 played a crucial role in coordinating all activities, and I greatly appreciate his contributions. Special thanks to urbanization experts Dr Mahendra Subba and Mr Ram Hari Gaihre 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 the report from a government perspective. I also acknowledge the technical support provided by the United Nations Population Fund (UNFPA) and the United Nations Human Settlements Programme (UNHABITAT). 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.

June 2025

Maddhu Sudan Burlakoti
Chief Statistician

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कार्यकारी सारांश

सहरी क्षेत्रको परिभाषा

सहरीकरण एक विश्वव्यापी महाप्रवृत्ति हो। विश्व जनसङ्ख्याको ५० प्रतिशतभन्दा बढी हिस्सा हाल सहरी क्षेत्रमा बसोबास गरिरहेको छ। सन् २०५० सम्म यो अनुपात ७० प्रतिशत पुग्ने आकलन गरिएको छ। नेपालमा सहरीकरणसम्बन्धी तथ्याङ्क पहिलोपटक वि.सं. २००९/११ को जनगणनादेखि उपलब्ध हुँदै आएको छ तापनि सहरी क्षेत्रको परिभाषा स्थिर नभएर पहिलो जनगणनादेखि नै समय-समयमा परिवर्तन हुँदै आएको छ।

नेपालको संविधानले परिकल्पना गरेको संघीय संरचनाअनुसार स्थानीय सरकार सञ्चालन ऐन २०७४ ले स्थानीय तहहरूको वर्गीकरणका लागि गाउँपालिका र नगरपालिकाको अवधारणालाई औपचारिक मान्यता प्रदान गरेको हो। नगरपालिकाका घोषणा हुनका लागि निश्चित जनसाङ्ख्यिक मापदण्डले हिमाली क्षेत्रमा न्यूनतम १०,०००, पहाडी क्षेत्रमा ४०,०००, भित्री मधेसमा ५०,०००, तराईमा ७५,००० र काठमाडौं उपत्यकामा १,००,००० जनसङ्ख्या पुगेको हुनुपर्दछ। राष्ट्रिय सहरी नीति २०६४ अनुसार वार्षिक राजस्वको आकार, जनघनत्व तथा तत् तत् क्षेत्रमा बसोबास गर्ने जनसङ्ख्याको आर्थिक संलग्नता समेतलाई नगरपालिका वर्गीकरणको आधार मानिएको छ।

नगरपालिकाको वर्गीकरण

वि.सं. २०७४ मा स्थानीय तह पुनःसंरचना भई साबिकका ३,९१५ गाउँ विकास समिति र ५८ नगरपालिकालाई पुनः वर्गीकरण गरी ४६० ओटा गाउँपालिका र २९३ ओटा नगरपालिका गठन भए। गठित नयाँ नगरपालिकाहरूमध्ये ६ ओटा महानगरपालिका, ११ ओटा उपमहानगरपालिका र २७६ ओटा नगरपालिका रहेका छन्। वि.सं. २०६८ देखि २०७८ सम्म ग्रामीण (गाउँ विकास समिति र गाउँपालिका) क्षेत्रमा बसोबास गर्ने जनसङ्ख्या ८२.० प्रतिशतबाट घटेर ३३.८ प्रतिशत पुगेको छ भने नगरपालिका क्षेत्रको जनसङ्ख्या १७.१ प्रतिशतबाट बढेर ६६.२ प्रतिशत भएको छ।

नगरपालिकामा जनसङ्ख्या वृद्धि

जनगणनाले प्रत्येक दशकको नगरपालिका तथा त्यसको जनसङ्ख्यामा स्थिर वृद्धि देखाएको छ। वि.सं. २००९/११ मा १० (२.९%), वि.सं. २०१८ मा १६ (३.६%), वि.सं. २०२८ मा १६

(४.०%), वि.सं. २०३८ मा २३ (६.४%), वि.सं. २०४८ मा ३३ (९.२%), वि.सं. २०५८ मा ५८ (१३.९%), वि.सं. २०६८ मा ५८ (१७.१%) र वि.सं. २०७८ मा २९३ (६६.२%) ओटा नगरपालिका रहेका छन्।

वि.सं. २०६८ देखि २०७८ का बिच नेपालको वार्षिक जनसङ्ख्या वृद्धिदर ०.९२ प्रतिशत रहेको छ। नगरपालिकाको जनसङ्ख्या वृद्धिदर यस अविधमा १.३६ प्रतिशत देखिएको छ भने गाउँपालिकाहरूमा प्रतिवर्ष ०.११ प्रतिशतको झिनो दरमा जनसङ्ख्या बढेको देखिन्छ। भौगोलिक क्षेत्रमध्ये पहाड (-०.३२%), तथा हिमाल (-०.२६%) गरी दुवैतिर ऋणात्मक वृद्धिदर रह्यो। पोखरा महानगरपालिकालाई समावेश नगर्ने हो भने गण्डकी प्रदेशको जनसङ्ख्या वृद्धिदर पनि ऋणात्मक देखिन्छ।

नगरपालिकामा जनसङ्ख्याको आकार

वि.सं. २०७८ मा नगरपालिकाहरूमा बसोबास गर्ने बहुसङ्ख्यक (५९.४%) जनसङ्ख्या मध्यम आकार (५०,०००—२,००,००० जनसङ्ख्या) का नगरपालिकामा बसोबास गर्ने देखिन्छ। नगरपालिका क्षेत्रका करिब एकचौथाइ अर्थात् २६.१ प्रतिशत जनसङ्ख्या साना आकारका नगरपालिका (५०,००० भन्दा कम जनसङ्ख्या) मा र १४.४ प्रतिशत जनसङ्ख्या मात्रै ठुला नगरपालिका (२,००,००० भन्दा बढी जनसङ्ख्या) मा बसोबास गर्दछन्। काठमाडौं, पोखरा, भरतपुर, ललितपुर, वीरगञ्ज र विराटनगर सबैभन्दा बढी जनसङ्ख्या भएका महानगरपालिका हुन्। वि.सं. २०६८ मा जनसङ्ख्याको आकारका दृष्टिले शीर्षस्थ १० ओटा नगरपालिकाको जनसङ्ख्या अनुपात मा ५३.९ प्रतिशत रहेकोमा २०७८ मा उक्त अनुपात १७.५ प्रतिशतमा खुम्चिएको देखिन्छ।

बसाइँसराइ र अनुपस्थित जनसङ्ख्या

नगरपालिकामा बस्ने जनसङ्ख्याको २५.२ प्रतिशत अरू जिल्लामा जन्मिएको र २.६ प्रतिशत विदेशमा जन्मिएको देखिन्छ । यसबाट बसाइँसराइ उल्लेखनीय रहेको दर्शाउँछ। बसाइँसराइको प्रवृत्ति तराईकेन्द्रित देखिन्छ । बसाइँसराइ पहाड र हिमालबाट तराईतर्फ, भारतबाट नेपालमा र तराईभित्रै एक स्थानीय तहबाट अर्कोमा स्थानान्तरण उल्लेखनीय छन्।

प्रदेश, भौगोलिक क्षेत्र, प्रशासनिक एकाइ वा सहरीकरणको स्तर जुनसुकै भए पनि अनुपस्थित जनसङ्ख्यामा पुरुषको सङ्ख्या बढी छ। महिलाको अनुपस्थित सङ्ख्या भने काठमाडौं उपत्यका र महानगरपालिकामा उल्लेखनीय छ। अनुपस्थित जनसङ्ख्या विशेष गरी युवा उमेर समूह (१५—३४

वर्षः ७५.८%) र प्रौढ (३५—६४ वर्षः १४.९%) मा बढी छ। युवा वर्गको अनुपस्थितिले राष्ट्रिय श्रमशक्तिमा ह्रास भएको सङ्केत गर्छ। अनुपस्थित जनसङ्ख्यामा आदिवासी र दलित समुदाय प्रमुख रहेका छन्, यद्यपि मधेस, सुदूरपश्चिम र कर्णालीमा तिनीहरूको अनुपात केही कम छ।

सहरीकरणको स्तर

वि.सं. २०७८ को जनगणनाको तथ्याङ्कको आधारमा तयार गरिएको DEGURBA विधिको विश्लेषणअनुसार नेपालमा केवल २७ प्रतिशत जनसङ्ख्या मात्र सहरी क्षेत्रको मापदण्डभित्र पर्ने स्थानमा बसोबास गर्दछन् भने ४० प्रतिशत अर्धसहरी क्षेत्रमा बसोबास गर्दछन्। कुल ७५३ स्थानीय तहमध्ये ४८७ (६४.७%) ओटामा सहरी जनसङ्ख्या नै छैन र यी स्थानीय तहमा कुल जनसङ्ख्याको ६२.६ प्रतिशत हिस्साले बसोबास गरिरहेको देखिन्छ। गाउँपालिकाका १३९ ओटा वडा सहरी वर्गीकरणमा समेटिएका छन्। गाउँपालिकामध्ये १७ ओटा जसमा ४० प्रतिशतभन्दा बढी सहरीकरणको स्वरूप छ तिनले कुल सहरी जनसङ्ख्याको २.३ प्रतिशत हिस्सा मात्र समेटेको देखिन्छ।

भूमि र आवासका विशेषता

सहरीकरण अक्सर खेतीयोग्य भूमिमा हुने गरेको छ जुन नेपालमा वि.सं. २०६८ देखि २०७८ सम्ममा १६.६ प्रतिशतले घटेको छ (२२ लाख हेक्टरबाट १८ लाख हेक्टर)। सुदूरपश्चिम (९.१%), गण्डकी (७%) र कर्णाली (५.४%) मा उब्जाउ भूमि न्यून भएकाले यहाँ ठुलो प्रकृतिको सहरीकरणको सम्भावना सीमित देखिन्छ। सहरी क्षेत्रको आवासीय गुणस्तर जस्तो कि छानो निर्माणमा प्रयोग हुने सामग्री र खानेपानी सुविधाको हिसाबले ग्रामीण क्षेत्रको तुलनामा अब्बल रहेको मानिन्छ। महानगरपालिकामा ४२.६ प्रतिशत परिवार भाडाको घरमा बसेको देखिन्छ। काठमाडौं उपत्यकामा यस्तो अनुपात ५०.१ प्रतिशत छ भने अन्य सहरी क्षेत्रमा ३४.३ प्रतिशत रहेको छ। गाउँपालिकाहरूमा यो अनुपात केवल २.६ प्रतिशत रहेको छ।

जलवायुजन्य जोखिम

जलवायुजन्य जोखिमको मानाङ्क गाउँपालिकामा उच्च (०.५९२), नगरपालिकामा मध्यम (०.३२५), उपमहानगरपालिका (०.०५७) र महानगरपालिका (०.००५) मा अति न्यून रहेको छ। समृद्ध र स्रोतसाधनयुक्त उपमहानगर र महानगरहरूमा जलवायुजन्य जोखिम न्यून हुने गरेको छ जहाँ पूर्वाधार, रोजगारी, शिक्षा र स्वास्थ्य सुविधाहरूमा सहज पहुँच छ। यस्ता पूर्वाधार र सुविधा वि.सं. २०६८

यताका नवगठित नगरपालिका र विशेषतः गाउँपालिकामा सीमित वा अति न्यून मात्रामा उपलब्ध छन्।

सडक र सिर्जित सञ्जाल

सडकलाई राष्ट्रिय राजमार्ग (NH), जिल्ला सडक (DR) र स्थानीय सडक (LR) मा वर्गीकरण गरेर हेर्दा ती तीनबिचको अनुपात १:१.८:३.९ रहेको छ। यो अनुपातले राष्ट्रिय परिदृश्यमा जिल्लास्तरीय सडकको न्यूनता रहेको सङ्केत गर्दछ। समष्टिमा भन्नुपर्दा सडक सञ्जालको अवस्था र तिनको वर्गीकरणका आधारमा तत् तत् क्षेत्रमा मानिसहरूको गतिशीलता कस्तो छ भनेर आकलन गर्न सहज हुन्छ। महानगर क्षेत्रमा राष्ट्रिय राजमार्ग, जिल्ला सडक र स्थानीय सडकको अनुपात १:१.१:९.५ रहेको छ। यस अनुपातले अन्तरनगर र अन्तरबस्तीका बिचमा हुने सडक सञ्जालको अपर्याप्ततालाई प्रतिविम्बित गर्दछ। सडकको घनत्व र श्रेणीबाहेक यसको अनुपातले सडकबाट प्राप्त हुने सुविधा, यसको क्षमता (गुणस्तर, सुरक्षा, समय, पहुँच, दिगोपना आदि) र मानिसहरूको आवतजावतलाई समेत निर्धारण गर्दछ। हिमाली क्षेत्रका कुल १३०४ ओटा वडामध्ये ६५.६ प्रतिशतमा सडक कालोपत्रे छन् भने पहाडी क्षेत्रका कुल २१६३ ओटा वडामध्ये ५३ प्रतिशतमा कालोपत्रे हुन बाँकी छ।

मानव विकास

बागमती (०.६६१) र गण्डकी (०.६१८) प्रदेशको मानव विकास सूचकाङ्क राष्ट्रिय औसत (०.५८७) भन्दा उच्च छ। बाँकी सबै प्रदेशको मानव विकास सूचकाङ्क औसतभन्दा कम छ। सबैभन्दा न्यून मानव विकास सूचकाङ्क मधेसमा छ। कर्णाली प्रदेशमा असमानताजन्य सूचक उच्च भएकाले मानव विकास सूचकाङ्क पनि सबैभन्दा कम (०.३७५) छ।

गरिबीको दर विभिन्न प्रदेशमा निकै नै असमान रहेको देखिन्छ। बहुआयामिक गरिबीको अवधारणाअनुसार बागमतीमा ७ प्रतिशत, गण्डकीमा ९.६ प्रतिशत र कोशीमा १५.९ प्रतिशत जनसङ्ख्या गरिबीको रेखामुनि रहेको छ। कर्णालीमा सबैभन्दा उच्च अर्थात् ३९.५ प्रतिशत बहुआयामिक गरिबीको मान छ भने यसलाई २५.३ प्रतिशत मानसहित सुदूरपश्चिमले पछ्याएको देखिन्छ। मधेस प्रदेशमा बहुआयामिक गरिबीको मान २४.२ प्रतिशत र लुम्बिनीमा १८.२ प्रतिशत रहेको छ।

राष्ट्रियस्तरमा २०.३ प्रतिशत जनसङ्ख्या उपभोगजन्य गरिबीको रेखामुनि रहेको छ। गरिबीको अन्तरले देखाएअनुसार ४.५ प्रतिशत जनसङ्ख्याको औसत आम्दानी गरिबीको निर्धारित रेखाभन्दा तल

रहेको छ। उपभोगमा गरिने खर्चका आधारमा परिवारका बिचमा रहेको असमानता उल्लेखनीय अर्थात् ३० प्रतिशत रहेको देखिन्छ।

गाउँपालिकाको तुलनामा नगरपालिका क्षेत्रमा गरिबीको दर कम छ। सबैभन्दा न्यून अर्थात् ७.३ प्रतिशत गरिबीको दर काठमाडौं उपत्यकामा रहेको छ। यसले सहरीकरण सँगसँगै गरिबीको दर घट्ने सङ्केत गर्दछ।

सहरीकरणका कारकहरू

डिगर्बा (DEGURBA) वर्गीकरणमा आधारित सहरी विशिष्टता परीक्षण गर्न १८ ओटा सम्भाव्य व्याख्यात्मक चरहरूको प्रयोग गरी यस प्रतिवेदनको तयारीमा लजिस्टिक रिग्रेसन मोडेल प्रयोग गरिएको छ। यहाँ उपयोग गरिएका १८ ओटा व्याख्यात्मक चरहरूले सहरी विशिष्टतालाई सार्थक रूपले प्रतिविम्बित गरेका छन् र तिनले प्रयुक्त चरहरूको ४९.३ प्रतिशत व्याख्या गर्ने क्षमता देखाएका छन्।

सहरी अर्थतन्त्र

आर्थिक चरहरूले केही संरचनागत परिवर्तनहरूलाई उजागर गरेका छन्। सहरी क्षेत्रमा आर्थिक रूपले सक्रिय जनसङ्ख्या निर्वाहमुखी कृषि क्षेत्रबाट सेवासम्बद्ध पेसागत क्षेत्र र केही हदसम्म उत्पादन वा निर्माणजन्य क्षेत्रमा केन्द्रित रहेको देखिन्छ। यस्तो प्रवृत्ति मूलतः उपमहानगर र महानगरमा बढी देखिन्छ। यस प्रवृत्तिलाई अर्धसहरी क्षेत्रमा पनि देख्न सकिन्छ। प्राथमिक र द्वितीयक क्षेत्रबाट औद्योगिक क्षेत्रतर्फको बढ्दो रुपान्तरण सुस्पष्ट रूपले महानगर र उपमहानगर क्षेत्रमा देखिएको छ। यति हुँदाहुँदै पनि सहरी क्षेत्रले पर्याप्त रूपमा औपचारिक प्रकृतिका रोजगरीका अवसरहरू सिर्जना गर्न भने सकेका छैनन् भलै तिनले घरपरिवारहरूका लागि बजारको अवसर भने पैदा गरिदिएका छन्।

'सहर' शब्दावलीको पुनर्भाष्य

जनसङ्ख्याको आकार, जनघनत्व र सहरीकरण मापनको परम्परागत विधिले मात्र सहर शब्दावलीलाई निरपेक्ष रूपमा परिभाषित गर्न पर्याप्त हुँदैन। यस्तो परिभाषा र वर्गीकरणले गतिशील वातावरण र बहुआयामिक कार्यको प्रकृतिलाई प्रतिविम्बित गर्दैन। रिग्रेसन विश्लेषणका नतिजाहरूले पनि उस्तै प्रकारका विशिष्टताहरूलाई उजागर गरेका छन्। यसर्थ, सहरको परिभाषा गर्दा देहायका विस्तृत विशिष्टताहरूलाई सम्मिलित गर्नु तर्कसम्मत हुन्छः

१. जनसङ्ख्यासम्बन्धी आयाम

२. उन्नत जीवनस्तर

३. रोजगारी सिर्जना गर्नसक्ने सामर्थ्य र उत्पादनमुखी क्रियाकलापमा संलग्न जनसङ्ख्या

४. सहरी संसार क्रियाशील गराउन आवश्यक पर्ने भौतिक, सामाजिक आर्थिक सेवासुविधा वा पूर्वाधार

५. सहरबासी समुदायको मनोरञ्जन र सुविधामैत्री मनोरञ्जनजन्य सुविधा, र

६. जलवायुजन्य जोखिमबाट सुरक्षित रहनका लागि सुविधायुक्त एकीकृत योजना

रोजगारी र बजार सम्भावना

सहरीकरण आर्थिक वृद्धि, रोजगारी सिर्जना र बजार विस्तारको उत्प्रेरक हो। महानगरहरूको सन्निकटताले गरिबी न्यूनीकरण र समृद्धि प्रवर्धनमा सघाउ पुऱ्याउँदछ। समग्र सहरी प्रणालीले सहरलाई अंश–अंश (मुख्य सहर निकटवर्ती नगर वा बजार आदि) मा पहिचान र व्यवस्थापन गर्दछ। प्रदेशस्तरका आर्थिक नीतिहरू राष्ट्रिय नीति तथा स्थानीय योजनासँग आबद्ध गरिनुपर्दछ र परस्परमा आबद्ध सहरहरूलाई स्वतन्त्र वा स्वायत्त हैसियतको बदलामा एकीकृत रूपमा समेट्नुपर्दछ।

पूर्वाधार सेवाको वित्तीय व्यवस्थापन

घरपरिवारहरूको आवास, सुधारिएको खानेपानी, सडक, विद्युत आदिमा पहुँच विस्तार गर्नका लागि संस्थागत र वित्तीय सहयोग हुनु वाञ्छनीय छ। यसप्रकारको सुधार र स्वामित्व सिर्जनाबाट आर्थिक विकासमा टेवा पुग्नेछ। सहरमा नवप्रवेशी बासिन्दाका लागि भाडाका आवासीय एकाइमाथिको पहुँचमा सुधार हुन जरुरी छ। यसका साथसाथै सरकारको स्वामित्वमा रहेका भूमिमाथिको अतिक्रमण रोकथाम गर्नेतर्फ पनि पुनर्विचार हुनु जरुरी छ। यी आवश्यकताहरूको सम्बोधनका लागि अति जरुरी नीति तथा संस्थागत वातावरणको सिर्जना गर्न यसप्रकारका प्रतिबद्ध प्रयासहरू अपेक्षित रहेका छन्।

EXECUTIVE SUMMARY

Definition of Urban

Urbanization is a global mega trend with over 50 percent of the population residing in cities, which is projected to reach 70 percent by 2050. Data on urbanization has been made available in Nepal since 1952/54 census, while the definition of urban areas has been inconsistent and changed several times since the first census enumeration. Under Nepal's federal structure established by the 2015 Constitution, the Local Government Operation Act 2017 formalized the terms Gaunpalika (rural municipality) and Nagarpalika (urban municipality) to categorize local governments. The population threshold for Nagarpalika was set as follows: a minimum population of 10,000 in Mountain regions, 40,000 in Hill regions, 50,000 in the Inner Tarai, 75,000 in the Tarai, and 100,000 in the Kathmandu Valley. The National Urban Policy 2007 cites annual revenue thresholds, population density, and the population's economic engagement as factors in the classification of municipality types.

Classification of municipality

With the restructuring and reclassification of local boundaries in 2017, the total of 3,915 pre-existing Village Development Committees (VDCs) and 58 municipalities were reclassified into 460 Gaunpalikas and 293 municipalities. Of the new municipalities, 6 were metropolitan cities, 11 sub-metropolitan cities, and 276 were municipalities. Between 2011 and 2021, the population in VDCs/Gaunpalikas plummeted from 82.0 to 33.8 percent, while the population in municipalities surged from 17.1 to 66.2 percent.

Municipal population growth

There has been a steady increase in the number of municipalities and their populations across decennial census recordings: 10 (2.9%) municipalities in 1952/54, 16 (3.6%) in 1961, 16 (4%) in 1971, 23 (6.4%) in 1981, 33 (9.2%) in 1991, 58 (13.9%) in 2001, 58 (17.1%) in 2011, and 293 (66.2%) in the 2021 census.

Between 2011 and 2021, the overall population of Nepal grew at an annual growth rate (AGR) of 0.92 percent. Municipalities saw a modest AGR of 1.36 percent and a stagnant increase was seen in the Gaunpalikas with an AGR of 0.11 percent. Among the ecological regions, both Hill and Mountain show negative growth rates of 0.32 and 0.26 percent, respectively. If Pokhara Metropolitan City is to be excluded, Gandaki Province shows a negative growth rate.

Municipal population size

In 2021, the majority of the municipal population (59.4%) live in medium size municipalities with a population ranging between 50,000-200,000. A quarter of the municipal population (26.1%) live in smaller municipalities with a population of less than 50,000. Only a small proportion of the municipal population (14.4%) live in large municipalities exceeding a population of 200,000. The metropolitan cities of Kathmandu, Pokhara, Bharatpur, Lalitpur, Birgunj and Biratnagar are the most populous municipalities. The proportion of the total population of the top 10 municipalities compared to the total population of all municipalities shows a significant decline from 53.9 in 2011 to 17.5 in 2021.

Migration and absentee population

The data shows that an average of one-quarter of the population (25.2%) who reside in municipalities are born in other districts and 2.6 percent are foreign-born, indicating significant in-migration rates. The data indicate that migration to Tarai tends to be a result of shifts in population from the Hill and Mountain ecological belts, migration from India, and shift of population from one local level to another within Tarai itself.

Males constitute a majority of the dominant absentee population, regardless of province, ecological belt, administrative units, and degree of urbanization. Conversely, the female absentee population is noticeable in Kathmandu Valley and metropolitan cities. The absentee population is dominantly within the young (15-34 years, 75.8%) and adult (35-64 years, 14.9%) age groups. The absence of a large youth population can be perceived as an indicator of the declining state of the national labour force. Indigenous and *Dalit* groups are the main caste/ethnic groups among the absentee population, although their proportions are seen to be somewhat lower in Madhesh, Sudurpashchim and Karnali provinces.

Level of urbanization

Based on the degree of urbanization (DEGURBA) analysis, only 27 percent of the population live in areas meeting the basic parameters of urban, followed by 40 percent living in peri-urban areas. Of the total 753 local levels, 487 (64.7%) have no population living in urban areas, and these local levels contain 62.6 percent of the total population. The 139 wards within Gaunpalikas have an urban categorization and 17 Gaunpalikas, with a level of urbanization above 40 percent, containing 2.3 percent of the urban population.

Land and housing characteristics

Urbanization typically occurs on arable land, which has decreased by 16.6 percent and from 2.2 to 1.8 million hectares between 2011 and 2021. Sudurpashchim (9.1%), Gandaki (7%), and

Karnali (5.4%) provinces have limited arable land, indicating a restricted potential for large-scale urbanization in these provinces. The characteristics of housing, such as roofing materials and amenities such as drinking water supplies are better off in urban areas compared to their rural counterparts. Rental housing is significant in metropolitan cities at 42.6 percent. The proportion is significantly higher in Kathmandu Valley at 50.1 percent and is equally significant in urban areas at 34.3 percent. In comparison, Gaunpalikas show a negligible rental housing practices at 2.6 percent.

Climate vulnerability

The climate vulnerability score is high in Gaunpalikas (0.592), moderate in municipalities (0.325), and very low in sub-metropolitan cities (0.057) and metropolitan cities (0.005). The low vulnerabilities in (sub) metropolitan cities are likely due to the fact that they are relatively established, matured, capacitated, and resourceful, and have improved access to infrastructures, employment opportunities, education, and health amenities. These conditions are limited in municipalities - especially those newly formed after 2011 and largely absent in Gaunpalikas.

Roads and connectivity

Nationally, the hierarchical ratio of road lengths comprising of National Highway (NH): District Road (DR): Local Road (LR) is 1:1.8:3.9. The ratio tends to provide some indication of deficiency of district roads in the present national road stock. Overall, the hierarchy of roads provides broad insights into the mobility condition of the area.

The hierarchical road ratio (NH:DR:LR) in the metropolitan area is 1:1.1:9.5 - indicating a potential shortfall in the inter-city or inter-settlements connectivity or arteries.

Aside from variables such as road density and hierarchy, its proportion also determines the overall performance of roads including accessibility and mobility of the area. In the Mountain region, 65.6 percent of wards (out of a total of 1,304) lack black-topped roads, while in the Hill, 53 percent of wards (out of a total of 2,163) lack black-topped roads.

Human development

Bagmati and Gandaki provinces have greater Human Development Index (HDI) than the national average of 0.587 at 0.661 and 0.618, respectively. All remaining provinces have lower HDI than the national average. Madhesh has the lowest HDI. However, due to a higher inequality measure, IHDI is the lowest in Karnali at 0.375. As the HDI is not available by municipality type, the provinces with higher agglomeration tend to have better HDI indicating better human welfare in urban areas.

A huge disparity exists in the incidence of poverty in provinces. Muti-dimensionally poor population is the lowest in Bagmati at 7 percent. It is followed by Gandaki (9.6%), and Koshi (15.9%). Karnali has the highest multi-dimensionally poor population at 39.5 percent, followed by Sudurpashchim with 25.3 percent, Madhesh with 24.2 percent, and Lumbini with a rate of 18.2 percent.

Nationally, 20.3 percent of the population lives below the poverty line. The poverty gap shows that the average income of individuals falls below the poverty line by 4.5 percent. The inequality between households with regard to consumption expenditure tends to be substantial at 30 percent.

The poverty rate is lower at the municipalities compared to Gaunpalikas. The poverty rate in Kathmandu Valley is the lowest at 7.3 percent. This indicates that the poverty rate declines with the increased levels of urbanization.

Factors of urbanization

Based on the DEGURBA classification, urban characteristics have been tested with potential explanatory variables. A logistic regression model was employed in this study, aiming to predict a binary outcome variable as a measure of urbanization based on several predictor variables. The 18 explanatory variables turned out to be significant in explaining the variability of urbanity by 49.3 percent.

The model identifies several strong predictors of urbanity, with variables such as rental housing, and share of employment in the non-agriculture sector showing particularly high associations (odds ratios). The share of cropland area and absent household members are negatively associated with the outcome, suggesting that these factors reduce the likelihood of a ward being urban.

Urban economy

Economic variables show some structural shifts. The economically active population in urban areas shows increasing occupational reliance on services and to some degree, in manufacturing than subsistence agriculture. Such trends are dominant in sub-metropolitan and metropolitan cities and are also visible in peri-urban areas also. Emerging shifts in industrial sectors from primary to secondary and tertiary are conspicuous only in large urban centres such as metropolitan cities, and sub-metropolitan cities. However, urban areas are not seen to generate adequate formal employment opportunities, although these are creating market opportunities for households.

Revisiting the term 'urban'

The current definition, including population size, density, and methods for its measurement alone, is not independently sufficient to define the term 'urban'. Such a definition does not reflect the dynamic environment and the multi-faceted functions which the classification undertakes. The findings of the regression analysis also reveal similar characteristics. Therefore, the classification of urban areas needs to be approached by assimilating following broader characteristics: (i) population factors (as above), (ii) decent living conditions, (iii) its ability to create employment opportunities or people engaged in formal production activities, (iv) containing physical, social, and economic facilities necessary to undertake urban functions, (v) offering recreational amenities required for the wellbeing of communities, and (vi) being equipped with resilient integrated planning capabilities set in place to address climate risks.

Employment and market opportunities

Urbanization is a catalyst for economic growth, job creation, and market expansion. Metropolitan agglomerations drive prosperity and poverty reduction. Sub-national economic policies must align with national strategies and integrate into local planning through holistic urban systems-treating city clusters (core cities, surrounding towns/markets) as interconnected units, not standalone entities.

Financing of infrastructure services

Institutional and financial support to improve household access to basic entitlements such as housing, piped water system, connectivity, and electrification with the national grid requires prioritization. Improved entitlement conditions have a bearing on contributing to economic growth. In housing, the relevance of rental housing to improve accessibility to housing units to new urban entrants and mitigate the encroachment on government land needs examination. Such consistent efforts are needed to create the necessary policy and institutional environment to account for these requirements.

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ABBREVIATIONS AND ACRONYMS

AGR	Annual Growth Rate
BE	Business Establishment
CBS	Central Bureau of Statistics
CEE	Climate Extreme Event
DCRN	District Core Road Network
DEGURBA	Degree of Urbanization
DR	District Road
DWSS	Department of Water Supply and Sewerage
EAP	Economically Active Population
GDP	Gross Domestic Product
ha	hectare
HDI	Human Development Index
HF	Health Facility
HH	Household
IHDI	Inequality-adjusted Human Development Index
IUDP	Integrated Urban Development Plan
km	kilometre
LR	Local Level Road
MoFE	Ministry of Forest and Environment
MoLCPA	Ministry of Land Management, Cooperatives and Poverty Alleviation
MoUD	Ministry of Urban Development
MPI	Multidimensional Poverty Index
NA	National Average
NH	National Highway
NPHC	National Population and Housing Census
NSO	National Statistics Office
PH	Provincial Highway

ppHa	Person per Hectare
RCC	Reinforced Cement Concrete
RCP	Representative Concentration Pathways
SEF	School Education Facility
SSE	Small Scale Enterprise
UPI	Urban Primacy Index
VDC	Village Development Committee

GLOSSARY

Absentee	The population usually staying abroad at the time of enumeration who intend to return to their country in the future.
Adaptive capacity	The ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences of climate change.
Agglomeration	A large, densely and contiguously populated area consisting of a city and its suburbs.
Agricultural land	Land operated by agricultural holding which includes (i) arable land (land under temporary crops, pastures and meadows), (ii) land under permanent crops, (iii) land under permanent pasture, (iv) ponds, and (v) forest and other woodland.
Arable land	Land used for temporary crops, temporary meadows for mowing or pasture, land under market and kitchen gardens, and land temporarily fallow (less than five years).
Climate extreme events	The occurrence of a value of a weather or climate variable above (or below) a threshold value near the upper (or lower) end of the observed values of the variable such as high temperatures (e.g., heat waves), or extremely heavy rainfall.
Degree of Urbanization	A method for classifying areas as cities, towns, and suburbs, or rural areas, based on population density and contiguity. It aims to provide a standardized way to define and compare urban and rural areas across different countries, according to the standards set by European Commission and the United Nations.
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 denominators.
Economically Active Population	The segment of the population above a specified age that provides the labour supply for the production of economic goods and services. This includes all employed individuals (both employees and the self-employed), the unemployed, and those actively seeking work. It excludes those who are economically inactive, such as school children, students, pensioners, and others not participating in the labour force during a specified reference period.
Exposure	The presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected.
Household with absentee	A household having at least one member staying abroad at the time of enumeration who intends to return to the country in the future.

Human Development Index	A summary measure of achievements in three key dimensions of human development: a long and healthy life measured by life expectancy at birth (reflects access to healthcare, nutrition, and living conditions); access to knowledge assessed through mean years of schooling (average education level of adults) and expected years of schooling (years a child is projected to attend school); and a decent standard of living captured by GNI per capita (adjusted for purchasing power parity to reflect affordability of basic needs). The HDI is the geometric mean of normalized indices for each of the three dimensions.
Local Level	It is the third tier of state structure in addition to federation and province, consisting of rural municipalities (Gaunpalikas), and urban municipalities (municipalities, sub-metropolitan cities and metropolitan cities) in Nepal. These bodies are responsible for local governance and service delivery, operating under the framework of the Constitution of Nepal 2015 and the Local Government Operation Act 2017.
Multi-dimensions Poverty Index	It identifies deprivations at the household level across three key dimensions: health, education, and living standards. A person is considered 'multidimensionally poor' if he/she is deprived in a certain number of indicators across these dimensions. It reflects both the incidence (proportion of people in poverty) and the intensity (average number of deprivations among the poor) of poverty.
Sensitivity	Predisposition of society and ecosystems to suffer harm as a consequence of intrinsic and context conditions making it plausible that such systems once impacted will collapse or experience major harm and damage due to the influence of a hazard event.
Urban areas	Cities or densely populated areas where more than 50 percent of the population lives in dense urban clusters, contiguous set of 1 km² grid cells with a density of at least 1,500 inhabitants per km², and a total population of at least 50,000 inhabitants. Towns and semi-dense (peri-urban) areas where less than 50 percent of the population lives in dense urban clusters, contiguous set of 1 km² grid cells with a density of at least 300 inhabitants per km², and a total population of at least 5,000 inhabitants; and rural areas where less than 50 percent of the population lives in urban clusters. The study focuses on the characteristics of first group (urban areas).
Vulnerability	Propensity or predisposition to be adversely affected encompassing a variety of concepts including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

CHAPTER 1

INTRODUCTION

1.1 Rationale of the 'Urbanization and Development' thematic focus

With over 50 percent of the global population residing in cities, urbanization is a global mega trend, with this group projected to reach 70 percent by 2050.[1] Urbanization is particularly seen in less developed countries and Asia-Pacific is one of the fastest urbanizing global regions. The 'Degree of Urbanization' (DEGURBA) application is approved by the UN Statistical Division, to harmonize the definition of urban areas globally. DEGURBA classifies areas into the following categories: Cities (densely populated urban centres), Towns & semi-dense areas (smaller urban clusters), and Rural areas. DEGURBA defines the term 'urban' based on a combination of criteria, recognizing that countries may have different national definitions considering the following key aspects when classifying an area as urban:

i. **Population size and density**: Areas with a minimum population threshold (e.g., 5,000+ inhabitants) and high population density compared to surrounding rural areas;

ii. **Economic function and infrastructure**: Presence of economic activities (e.g., commerce, industry, services) and availability of urban infrastructure (roads, public transport, utilities, hospitals, schools);

iii. **Administrative and legal status**: Officially designated as a city, town, or municipality by national authorities and it may include peri-urban areas (transition zones between urban and rural); and

iv. **Functional characteristics**: Urban way of life (non-agricultural employment, diverse social services, cultural facilities, and Continuity of built-up areas (e.g., absence of large tracts of farmland within the urban boundary).

The urban system in Nepal presents a disharmony between how the urban areas are defined and declared. The National Urban Policy (2007) and the National Urban Development Strategy (2017) had defined the characteristics of the urban centres based on i) a population exceeding 5000; ii) a population density of a minimum of 10 persons per hectare (ppHa); and iii) with a minimum of 50 percent of the population above 10 years engaged in non-agricultural economic activities (NSO, 2023).

[1] Resilience | UN-Habitat (unhabitat.org)

About 66 percent of Nepal's population live in municipalities, showing an increasing trend (NSO, 2021). However, the urbanization level is not sufficiently captured by the municipal population alone. Given the administrative restructuring that led to a sharp rise in the number of municipalities - from 58 in 2011 to 293 in 2021 - the population-based classification overlooks critical urban variables such as density, economic activities, services, and others. Hence, a majority of the municipalities still have rural characteristics and fail to demonstrate the transformation in life and economy despite the change in their municipal status.

The past decade has also witnessed a demographic shift with regard to a decline in population growth in the Hill and Mountain regions and a rising concentration mainly in the Tarai region and established agglomerations. Both municipalities and Gaunpalikas[2] of 37 districts have witnessed a population decline in the Mountain and the Hill, in contrast to a higher concentration of population in Tarai and Inner Tarai regions, challenging the feasibility of investments, existing infrastructure, and imbalance in socio-economic structure in both the Hill and the Tarai regions.

Likewise, the historical imbalance in the level of urbanization has continued from east to west. Karnali and Sudurpashchim provinces have continued to demonstrate low numbers and levels of municipalities, and low development parameters, highlighting disparities and widening development gaps. Hence, even with the promising trend of urbanization and surge of the number of municipalities, the expected impact of urbanization and proportional progress in development parameters such as the Gross Domestic Product (GDP), Human Development Index (HDI), and Multidimensional Poverty Index (MPI) are yet to be realized.

Concurrently, climate change has become a global crisis. In Nepal, the increasing incidence of climate-induced disasters such as floods and landslides in the past two decades underscores the urgent need for adaptation strategies to cope with growing risk at community levels[3] and especially in urban areas with a high concentration of people. These instances show that Nepal will be facing increasing climate distress, and its impacts are already made visible through escalating morbidity, mortality, and financial losses.[4]

Nepal, therefore, needs to prioritize and capture the urbanization trend by strategically addressing the imbalances in order to leverage the roles of cities and their agglomeration. Sustainable, balanced, and resilient urbanization will be critical to resist the effect of climate change and to function as an engine of growth to realize the impact that urbanization can bring for Nepal, to graduate from a least developed country.

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[2] The term Gaunpalika has been used throughout this report instead of rural municipality to preserve the essence of the word municipality.

[3] *https://www.preventionweb.net/news/nepals-communities-brace-multihazard-risks*

[4] *Muthukumara, M., & Gulrex, A. S. (2019).* As South Asia's heat rises, living standards decline. *World Bank Blogs.*

1.2 Objectives

The main purpose of this thematic report is as follows:

- To add to clarification of the term 'urban', based on the historical trend, global practices, correlated with critical physical, social and economic variables that contribute to quality of life in urban areas
- To reveal urbanization characteristics, trends and the resulting urban (re)structuring in the past decades, which have contributed to change in urban morphology
- To provide insights into the factors leading to the decline and growth of Local Levels[5], and potential causal factors such as access to employment opportunities, physical and social infrastructure and services, and environment conditions
- To examine the extent of relations between urbanization and development, if and how urbanization is contributing to economic growth
- To suggest policy implications for the urban sector, based on the understanding of the current status to undertake evidence-based planning and development

1.3 Methods of data compilation and analysis

Population census data is the basis for conducting the assessment, and the majority of the variables are derived from the census questionnaire with data provided by the National Statistics Office (NSO). In addition, data on climate risk and vulnerability has been obtained from the report of the Ministry of Forest and Environment, with support from Oxford Policy Management. Additional data on social infrastructure like health and education has been received from the Ministry of Health and Population and the Ministry of Education, Science and Technology respectively, and based on their Management Information System (MIS). Data on agricultural land use has been referenced from the Agricultural Censuses. Likewise, various published national reports and secondary data have been referred to assessing variables on development which are Gross Domestic Product (GDP), Human Development Index (HDI), Multidimensional Poverty Index (MPI), and consumption expenditure-based poverty measures.

Where available, each variable or dataset has been presented consistently to reflect the assessment at the provincial level, ecological regions/belts, administrative unit (type of municipality), and DEGURBA classification. The effort is to generate comparable datasets across multiple variables to understand the urbanization trend and correlation.

[5] In the Federal Democratic Republic of Nepal, the Local Levels represent the third tier of government under the 2015 Constitution. These 753 Local Levels consist of 293 Urban Municipalities (Nagarpalika) and 460 Rural Municipalities (Gaunpalika). They function as autonomous bodies with elected representatives, exercising powers and responsibilities as defined by the constitution and federal laws, including the Local Government Operation Act of 2017.

The ecological belt used in this report differs from the district classifications by ecological region used elsewhere, as it is intended for the classification of the municipalities. This follows the classification (The Details of Districts of the Mountain, Hill, Inner Tarai, and Tarai) annexed in the Local Governance Act, 2074 (2017) Schedule-1 (related to Sub-section (1) of Section (a) of Sub-clause (1) of Clause 8).

"8. Classification of the Municipalities: *(1) The Government of Nepal, in consultation with the concerned Local Level and provincial government, may declare a Municipality, Sub-Metropolitan City, or Metropolitan City based on the fulfilment of the following conditions and facilities:*

(a) Municipality: (1) At least ten thousand population in the mountainous region of the districts at the Mountain, at least forty thousand in the hilly region of the districts at the Mountain and the Hill, at least fifty thousand in the districts of Inner Tarai, at least seventy-five thousand in the districts of Tarai, and at least one hundred thousand in the districts within Kathmandu valley.

EXPLANATION*: For this clause, the districts of the Mountain, Hill, Inner Tarai, Tarai, and Kathmandu Valley shall refer to the districts listed in Schedule-1."*

The report has been enriched mainly by the recent 2021 National Population and Housing Census (NPHC) data and compared with its previous series. The individual and household level information is used for the analysis in terms of absolute numbers and percentages and percentage changes where trend analysis is done. Most of the census population and household tables are developed based on the ward (the lowest administrative unit) level data to accommodate the DEGURBA classification done at the ward level. For in-depth analysis such as population density and its class (categorization), the institutional population has not been used as they were not available for inter-censual comparison in this disaggregation. Furthermore, a comparative analysis of the last three censuses of 2001, 2011, and 2021 suffers from attrition in population as 962 wards were missing in the census, affecting the national total and population growth rate at comparable geographic disaggregation. The area at the ward and Local Level also suffers when producing the national total due to the lack of disaggregation resulting from reserved areas (National Parks, Wildlife Reserves, Conservation Areas). This has given rise to the difference in population density (population per hectare) and inter-census population growth rates in different geographical areas.

The information on urban/rural setup is rare as the DEGURBA classification is quite new for Nepal and past censuses, surveys, and administrative MIS do not contain this component. Therefore, most of the analysis is made on the type of municipality (classification of municipalities as 'Municipality', 'Sub-Metropolitan City' and 'Metropolitan City') and some on the basis of DEGURBA classification. The tables on province and ecological belts are used to infer the population shift and explain the development aspect as a proxy of urbanization.

1.4 Organization of the report

This thematic report is structured around three major chapters:

i. Urbanization in Nepal highlighting the demographic shifts and trends;

ii. Urban conditions and services focused on access to or distribution of physical and social infrastructure;

iii. Development indicators with an attempt to link urbanization with economic transformation reflected through human development.

The report further highlights key findings and inferences from the assessment, followed by policy recommendations for evidence-based planning and investments.

CHAPTER 2

DEFINING THE TERM 'URBAN'

In Nepal, the historical evidence of prominent towns and settlements is recorded since the Lichchhavi period (100 BC to 1000 AD), followed by the Malla and Shah dynasty (Malla, 1978). However, while data on urbanization has been available since 1952/54 census, the definition of urban has been inconsistent and changed several times since the first census, posing challenges to produce comparable data across the censuses.

The 1952/54 census provided data for 10 settlements with a population of over 5,000, of which 5 were in Kathmandu Valley and the rest in Tarai region. The term 'urban' was formalized as "Sahar" only in the 1961 census, with 16 Sahars having the characteristics of an "area with a population of above 5,000 and urban environment such as high school, college, judicial and administrative office, markets, communications facilities, factories, etc." (Bastola, 1995)

The Nagar Panchayat Act 1962 used "Nagar" as a terminology to define formal local level urban administration units that were municipal bodies, not limited to the boundaries of settlements but encompassing hinterland and network of settlements. The *Nagar Panchayat* was different from the rural administration unit (*Gaun Panchayat*), with the population criteria 'not less than 10,000' considered as Nagar. However, 4 out of 16 municipal bodies did not adhere to the population criteria in the 1971 census. It is important to note that there was a growing number of urban centres in the Tarai region after the eradication of malaria in the early 1960s, in addition to the fact that10 out of 16 municipal bodies in the 1971 census were in the Tarai and Inner Tarai region (Sharma, 2001).

Furthermore, in 1976, the population criteria for municipal status were reduced to 9,000. Thus in 1981 and 1991, the number of municipal bodies increased to 23 and 33, respectively. The terminology changed from "Nagar Panchayat" to "Nagarpalika" with the re-establishment of democracy in 1990. The number of municipalities in Tarai and Inner Tarai also subsequently increased to 16 and 22 respectively in these two censuses.

The Local Self Governance Act 1999 again redefined Nagarpalikas and classified them into three categories based on population, amenities, and annual revenue: i. Nagarpalika with a population of 20,000 and an annual revenue of Rs. 5 million in Tarai; and a population of 10,000 and a revenue of Rs. 500,000 in Hill/Mountain -- both with minimum urban services; ii. Upa-Mahanagarpalika (sub-metropolitan cities) required a minimum population of 100,000, annual

revenue of Rs. 100 million and a decent level of basic services; iii. Mahanagarpalika (metropolitan cities) required basic and higher-order facilities with a minimum population of 300,000, annual revenue of Rs. 400 million. According to this definition, in the 2001 and 2011 censuses, 58 municipal bodies were designated, including 1 Metropolitan city, 4 Sub-metropolitan cities, and 53 municipalities.

With the Local Government Operation Act 2017, following the federal restructuring, the definition of municipal bodies was again updated with an increase in population thresholds in all categories and with acceptable standards of facilities based on the hierarchy of municipal bodies. The village bodies were termed Gaunpalikas updating the former Village Development Committees (VDCs).

It further classified Nagarpalikas based on the ecological region. Based on this reclassification:

I. Nagarpalika are classified as having a minimum population of 10,000 in the Mountain; a population of 40,000 in the Hill; a population of 50,000 in Inner Tarai; a population of 75,000 in Tarai; and a population of 100,000 in Kathmandu Valley. With the exception of the Mountain zone which require an annual revenue of Rs. 10 million, the rest of the regions require Rs. 30 million;

II. Upa-Mahanagarpalika are classified by a threshold containing a minimum population of 200,000 and a revenue of Rs. 250 million; and

III. Mahanagarpalika require a population of 500,000 and an annual revenue of Rs. 1,000 million.

In between, the National Urban Policy 2007 also provided a definition for “urban centres” as containing the population thresholds of a minimum population of 5,000, a density of 10 persons per hectare (ppHa), and a minimum of 50 percent of the population above 10 years engaged in non-agricultural economic activities (MoUD, 2007).

Only the population threshold was taken into consideration for the declaration of Nagarpalikas. As a result, several Village Development Committees and even Nagarpalikas were annexed to form municipalities, with a significant rise in number from 58 in 2011- containing 17 percent population to 293 in the 2021 census. With 276 Nagarpalikas, 11 Upa-Mahanagarpalikas, and 6 Mahanagarpalikas, these municipalities contain 66.2 percent of the total population, while the majority of Nagarpalikas are still rural in landscape and lack density, services, and economic characteristics.

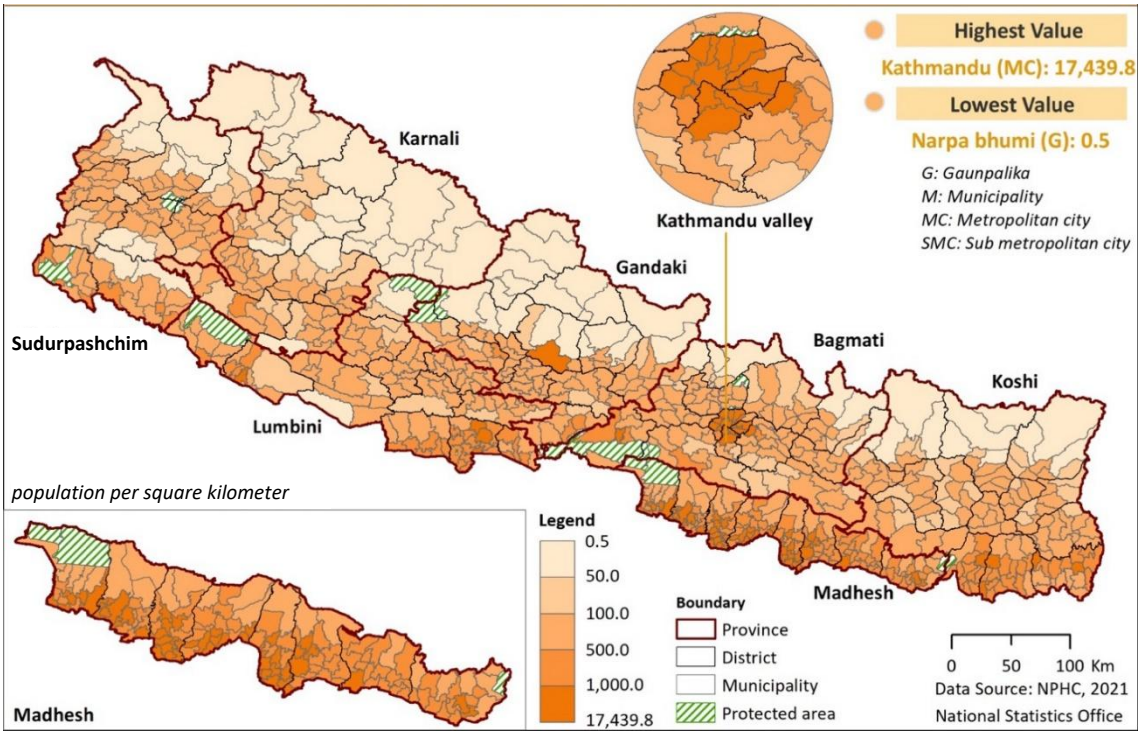
This further contested the definition of ‘urban’ and demanded spatial analysis to derive the level of urbanization in Nepal, which could no longer be defined by the population of municipalities. Hence, the NSO, in collaboration with UN-Habitat, along with MoUD and other stakeholders,

analysed 2011 and 2021 census data using DEGURBA to define the level of urbanization in Nepal. DEGURBA, as a global tool, uses population, density, contiguity, and built-up area data to spatially categorize the territorial units into levels of urbanization to produce globally comparable datasets.

Based on the criteria, the wards as the lowest administrative units were categorized into urban, peri-urban, and rural areas. Urban areas are characterized by a population density of more than 15 ppHa and a population over 50,000, with 4-point contiguity. Likewise, peri-urban areas are characterized by density between 3-15 ppHa and a population over 5,000, with 8-point contiguity. Rural clusters are characterized by a density of less than 3 ppHa or below and a population of no more than 5,000 with 8-point contiguity (NSO, 2023).

The analysis re-defined the understanding of urban areas, as reflected in the National Urban Policy (2024), with the urban population at 27 percent, peri-urban at 40 percent and the remaining percentage as rural. When assessing the ward-level data, the findings highlighted that the Nagarpalikas contained rural wards and Gaunpalikas contained urban wards within their jurisdiction, offering an important dimension to the analysis of urbanization.

Map 1: Population density by Local Level in Nepal 2021



CHAPTER 3

URBANIZATION IN NEPAL

3.1 Trends and patterns in designating municipalities

The 1952-54 census records 10 municipalities as exceeding the population of 5,000. Of these, five municipalities were from the Kathmandu Valley – namely Kathmandu (106,579), Lalitpur (42,183), Bhaktapur (32,320), Thimi (8,657), and Kirtipur (7,038) – and the remaining five from Tarai, with Birgunj (10,037), Biratnagar (8,060), Janakpur (7,037), and Rajpur Fartuwa (5,271) in the Eastern Tarai and Nepalgunj (10,813) in the Mid-Western Tarai. By 1981, in the period of around three decades, the number of designated municipalities grew to 23. Again, this is more than doubled in the following two decades to the figure of 58 by 2001. The number of designated municipalities continued to grow sharply by many folds to 293 in 2021. This was due to reclassification of local administrative boundaries in 2017 after promulgation of the Constitution (2015) that enacted a federal government system in Nepal. The relative increase in the pace of designation of municipalities after 1981 tends to indicate the gradual rise in the urbanization pressure in Nepal.

The 58 municipalities that were present in both the 2001 and 2011 censuses are considered more mature than newer municipalities. Therefore, for presentation purposes, only these 58 municipalities are shown in the table. A full list of 293 municipalities is available in the Annex. Table 1 shows a list of municipalities by year of designation of municipality status, demonstrating the chronology by both year of designation and by census year. For presentation purposes, the figure of 58 municipalities is continued across two consecutive census columns (2001 and 2011) of the table, with the complete list of 293 municipalities contained in this report's Annex section. – I.

Table 1: Name of municipalities and chronology of municipality status designation[6]

Municipality	District	Year	Census year							
			1952/54	1961	1971	1981	1991	2001	2011	2021
Amargadhi	Dandeldhura	1997						X	X	X
Baglung	Baglung	1997						X	X	X
Banepa	Kavre	1982		X			X	X	X	X
Bhadrapur	Jhapa	1953			X	X	X	X	X	X
Bhaktapur	Bhaktapur	1953	X	X	X	X	X	X	X	X
Bharatpur	Chitwan	1978				X	X	X	X	X
Bhimdatta	Kanchanpur	2008							X	X
Bhimeswar	Dolakha	1997						X	X	X
Bidur	Nuwakot	1986					X	X	X	X
Biratnagar	Morang	1953	X	X	X	X	X	X	X	X
Birendranagar	Surkhet	1976				X	X	X	X	X
Birganj	Parsa	1953	X	X	X	X	X	X	X	X
Butwal	Rupandehi	1959			X	X	X	X	X	X
Byas	Tanahu	1992						X	X	X
Damak	Jhapa	1982					X	X	X	X
Dasrathchand	Baitadi	1997						X	X	X
Dhangadhi	Kailali	1976				X	X	X	X	X
Dhankuta	Dhankuta	1978				X	X	X	X	X
Dharan	Sunsari	1962		X	X	X	X	X	X	X
Dhulikhel	Kavre	1986					X	X	X	X
Dipayal	Doti	1982					X	X	X	X
Gaur	Rautahat	1992						X	X	X
Ghorahi	Dang	2008							X	X
Gorkha	Gorkha	2009							X	X
Gulariya	Bardia	1997						X	X	X
Hetauda	Makwanpur	1969			X	X	X	X	X	X
Ilam	Ilam	1962			X	X	X	X	X	X
Inaruwa	Sunsari	1986					X	X	X	X
Itahari	Sunsari	1997						X	X	X
Jaleswar	Mahottari	1982					X	X	X	X
Janakpur	Dhanusha	1962	X	X	X	X	X	X	X	X
Kalaiya	Bara	1982					X	X	X	X

[6] Designation of the urban municipalities has been mainly based on population. In several cases, areas of the municipalities have changed accommodating the adjoining VDCs or municipalities to fulfill the population criteria.

Municipality	District	Year	Census year							
			1952/54	1961	1971	1981	1991	2001	2011	2021
Kamalamai	Sindhuli	1997						X	X	X
Kapilbastu	Kapilbastu	1982					X	X	X	X
Kathmandu	Kathmandu	1953	X	X	X	X	X	X	X	X
Khandbari	Sankhuwasabha	1997						X	X	X
Kirtipur	Kathmandu	1997	X	X				X	X	X
Lahan	Siraha	1976				X	X	X	X	X
Lalitpur	Lalitpur	1953	X	X	X	X	X	X	X	X
Lekhnath	Kaski	1997						X	X	
Madhyapur Thimi	Bhaktapur	1997	X	X				X	X	X
Mahendranagar	Kanchanpur	1977				X	X	X		
Malangwa	Sarlahi	1986	X	X			X	X	X	X
Matihani	Dhanusha	2017		X						X
Mechinagar	Jhapa	1997						X	X	X
Narayan	Dailekh	1997						X	X	X
Nepalganj	Banke	1962	X	X	X	X	X	X	X	X
Panauti	Kavre	1997						X	X	X
Pokhara	Kaski	1962		X	X	X	X	X	X	X
Prithvinarayan	Gorkha	1997						X		
Putalibazar	Syangja	1997						X	X	X
Rajbiraj	Saptari	1959		X	X	X	X	X	X	X
Ramgram	Nawalparasi	1997						X	X	X
Ratnanagar	Chitwan	1997						X	X	X
Siddharthanagar	Rupandehi	1967			X	X	X	X	X	X
Siraha	Siraha	1997						X	X	X
Tansen	Palpa	1957		X	X	X	X	X	X	X
Tikapur	Kailali	1997						X	X	X
Tribhuvannagar	Dang	1978				X	X	X		
Trijuga	Udayapur	1997						X	X	X
Tulsipur	Dang	1992						X	X	X
Waling	Syangja	1997						X	X	X
Total number			10	16	16	23	33	58	58	293
Population			2.87	3.57	4.00	6.37	9.17	13.94	17.07	66.17

Source: CBS [1995]. CBS [2003]. Sharma, P. [2001]. Population Censuses 1952/54-2021, NSO

Municipalities such as Banepa, Kirtipur, Madhyapur Thimi, Malangwa, and Matihani were declassified and reclassified as urban municipalities in-between the period. Municipalities

previously known as Prithvinarayan, Tribhuvannagar, and Mahendranagar have been renamed as Gorkha, Ghorahi, and Bhimdatta, respectively. Lekhnath municipality has been merged with Pokhara Sub-metropolitan City in the 2021 census.

3.2 Population change due to reorganization/reclassification of local boundaries

The reclassification of local boundaries in 2017 had reorganized not only the number but also the respective populations of municipalities and Gaunpalikas. A total of 3,915 village development committees (VDCs) and 58 municipalities were reclassified as 460 Gaunpalikas and 293 municipalities. Among the new municipalities, 6 were metropolitan cities, 11 sub-metropolitan cities, and 276 were municipalities. Following reclassification between 2011 and 2021, populations living in VDCs/Gaunpalikas were reduced dramatically from 82.0 to 33.8 percent, while population in municipalities increased from 17.1 to 66.2 percent.

Table 2: Population changes by type of municipality due to reorganization/reclassification of local boundaries

Municipality Type		Census 2001		Census 2011	Admin. 2015[7]		Census 2021
	No.	Population	No.	Population	No.	No.	Population
VDC/Gaunpalika[8]	3,914	9,084,582	3,915	9,755,796	3,159	460	9,867,790
Municipalities	**58**	**13,573,997**	**58**	**16,738,708**	**217**	**293**	**19,296,788**
Municipality	53	10,637,180	53	12,702,556	204	276	14,709,034
Sub-Metropolitan City	4	1,195,715	4	1,578,306	12	11	1,972,831
Metropolitan City	1	1,741,102	1	2,457,846	1	6	2,614,923
Total	**3,972**	**22,658,579[9]**	**3,973**	**26,494,504**	**3,376**	**753**	**29,164,578**

Source: Population Censuses 2001-2021, NSO

In 2021, the total number of local bodies decreased to 753, instigated with the consolidation of VDCs to form municipalities and Gaunpalikas. The drastic increase in number of municipalities from 58 to 293 corelates with the rate of urban population share, which increased from 17.07 percent in 2011 to 66.17 percent in 2021.

[7] The 58 municipalities recorded in the 2011 census were expanded by 72 on 2071/01/25 (08 May 2014), 61 on 2071/08/16 (02 December 2014), and 26 on 2072/06/01 (18 September 2015), bringing the total to 217 municipalities prior to the administrative restructuring on 2073/11/22 (05 March 2017).

[8] Village Development Committee (VDC) are rural administrative units before the restructuring in 2015. After restructuring, the designated rural municipalities are referred as 'Gaunpalikas' and urban municipalities categorized as 'municipalities, sub-metropolitan and metropolitan cities' throughout this report.

[9] Excludes imputed population of 962 wards not enumerated in the population census 2001

3.3 Distribution of households and population density

The number of households and the population concentration is generally large in four provinces - namely Bagmati, Koshi, Madhesh, and Lumbini - with the largest share of the population seen in Bagmati (21%) and Madhesh (21%). These latter two provinces also show contrasts in household size; after Gandaki Province, Bagmati has the second lowest average figure of 3.89, while Madhesh has the largest at an average of 5.29. Bagmati and Madhesh also reveal large population densities. Madhesh by virtue of its small area and plain topography has the largest density of 6.87 ppHa (person per hectare), while Bagmati has 3.32 ppHa. The latter's density is largely increased by the Kathmandu Valley - which is the densest urban agglomeration of the country with a density of 32.41 ppHa. Lumbini and Koshi have densities of 2.87 and 2.01 ppHa, respectively. The remaining 3 provinces of Sudurpashchim, Gandaki and Karnali have low population densities of 1.41, 1.15 and 0.67 ppHa, respectively.

Among the administrative units, the density is the lowest in Gaunpalikas (1.08 ppHa), and the highest in metropolitan cities (21.94 ppHa). The population density grows with increasing hierarchy of administrative units, following a hierarchy from Gaunpalika to municipality to sub-metropolitan city to metropolitan city.

Among the ecological regions, the Tarai and Inner Tarai have higher population densities of 5.62 and 2.17 ppHa respectively, with lower densities in the Hill (1.57) and Mountain (0.49).

Table 3: Number of households, average household size, population density and population distribution by province, ecological belt, and municipality type

Boundary	Number of households	Average household size	Population 2021	Area[10] (ha)	Population density (pop/ha)	Population distribution (%)
Province						
Koshi	1,191,556	4.16	4,961,412	2,466,253	2.01	17.0
Madhesh	1,156,715	5.29	6,114,600	890,262	6.87	21.0
Bagmati	1,570,927	3.89	6,116,866	1,842,927	3.32	21.0
Gandaki	662,480	3.72	2,466,427	2,138,909	1.15	8.5
Lumbini	1,141,902	4.49	5,122,078	1,784,189	2.87	17.6
Karnali	366,255	4.61	1,688,412	2,525,255	0.67	5.8
Sudurpashchim	577,102	4.67	2,694,783	1,917,223	1.41	9.2
Ecological Belt						
Mountain	653,472	4.11	2,683,806	5,474,584	0.49	9.2
Hill	1,557,508	4.04	6,299,434	4,010,890	1.57	21.6

[10] Inhabitant area excluding national parks, wildlife reserves, hunting reserves and development areas

Boundary	Number of households	Average household size	Population 2021	Area[10] (ha)	Population density (pop/ha)	Population distribution (%)
Inner Tarai	789,724	4.17	3,294,877	1,521,796	2.17	11.3
Tarai	2,872,496	4.83	13,861,075	2,464,394	5.62	47.5
Kathmandu Valley	793,737	3.81	3,025,386	93,355	32.41	10.4
Municipality Type						
Gaunpalika	2,187,275	4.51	9,867,790	9,158,976	1.08	33.8
Municipalities	**4479662**	**4.31**	**19296788**	**4406042**	**4.38**	**66.2**
Municipality	3,366,739	4.37	14,709,034	4,045,135	3.64	50.4
Sub-Metropolitan City	453,586	4.35	1,972,831	241,722	8.16	6.8
Metropolitan City	659,337	3.97	2,614,923	119,185	21.94	9.0
Nepal	**6,666,937**	**4.37**	**29,164,578**	**13,565,018**	**2.15**	**100**

Source: Population Censuses 2021, NSO

Table 3 shows the number of households, average household size, population distribution, and population density by province, ecological belt, and municipality type. It is here important to note that, whilst Karnali is the largest province in terms of area (18.6%), it holds the lowest share of the population – 5.8 percent of the total population – and the lowest population density. Among the ecological zones, Tarai holds the highest share of the population with 47.5 percent of the total population within a land area of 18.16 percent, second to the Mountain which holds 40.35 percent of the total land area with 9.2 percent of the total population.

The average household size is largest in the Tarai at 4.83, which indicates a larger family size which may result in a decrease in the level of welfare. It is also evident that household sizes are lower than the national average (4.37) in metropolitan and sub-metropolitan cities.

3.4 Population and growth rate according to administrative boundaries

From 2011 to 2021, the overall population of Nepal grew at an annual growth rate (AGR) of about 0.92 percent. The growth rate (0.92%) between 2011-2021 shows a decline when compared with that of 2001-2011 (1.56%). During the same period, municipalities grew only modestly at an AGR of 1.36 percent. The growth of Gaunpalikas was largely stagnant - with an AGR of 0.11 percent.

Among the provinces, Lumbini (1.24%), Madhesh (1.18%), and Bagmati (0.97%) grew marginally faster than the national AGR of 0.92 percent. The remaining provinces namely Koshi (0.86%), Karnali (0.69%), Sudurpashchim (0.52%), and Gandaki (0.25%) grew at a slower pace than the national average. If Pokhara Metropolitan City is to be excluded, Gandaki Province has a negative growth rate.

Among the ecological regions, both the Mountain and the Hill have a negative growth rate with the rate in the Hill (-0.32%) is declining faster than the Mountain (-0.26%). Pokhara (2.07%), Kathmandu Valley (1.76%), Tarai (1.48%) and Inner Tarai (1.46%) have positive AGR, which indicates these selected regions have grown at the expense of the Mountain and the Hill.

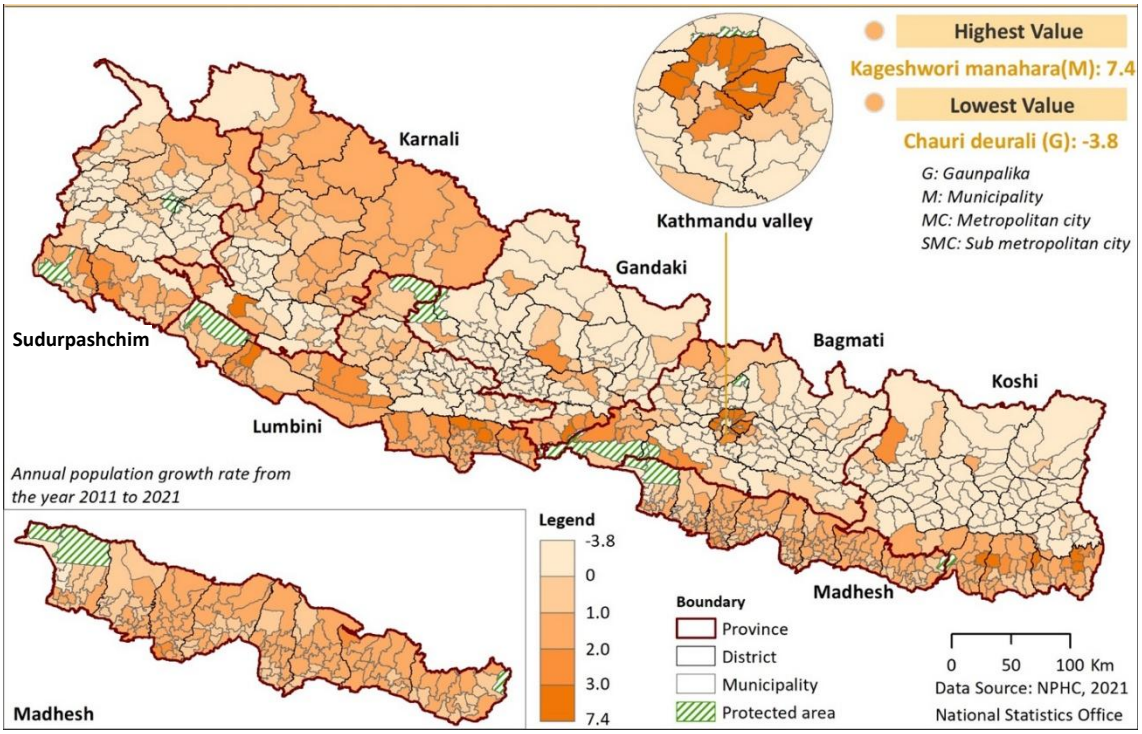
Table 4: Population and growth rate according to administrative boundaries, 2001-2021

Boundary	Population			Annual growth rate (%)	
	Census 2001	Census 2011	Census 2021	2001-2011	2011-2021
Province					
Koshi	4,136,903	4,534,943	4,961,412	0.92	0.86
Madhesh	4,596,724	5,404,145	6,114,600	1.62	1.18
Bagmati	4,492,926	5,529,452	6,116,866	2.08	0.97
Gandaki	2,307,592	2,403,757	2,466,427	0.41	0.25
Lumbini	3,952,081	4,499,272	5,122,078	1.30	1.24
Karnali	995,327	1,570,418	1,688,412	4.56	0.69
Sudurpashchim	2,177,026	2,552,517	2,694,783	1.59	0.52
Ecological Belt					
Mountain	2,502,308	2,758,391	2,683,806	0.97	-0.26
Hill	6,179,041	6,515,380	6,299,434	0.53	-0.32
Inner Tarai	2,421,119	2,829,176	3,294,877	1.56	1.46
Tarai	9,931,160	11,874,534	13,861,075	1.79	1.48
Kathmandu Valley	1,624,951	2,517,023	3,025,386	4.38	1.76
Municipality Type					
Gaunpalika	9,084,582	9,755,796	9,867,790	0.71	0.11
Municipalities	**13,573,997**	**16,738,708**	**19,296,788**	**2.10**	**1.36**
Municipality	10,637,180	12,702,556	14,709,034	1.77	1.41
Sub-Metropolitan City	1,195,715	1,578,306	1,972,831	2.78	2.14
Metropolitan City	1,741,102	2,457,846	2,614,923	3.45	0.59
DEGURBA Class					
Urban	4,589,739	6,569,573	7,963,572	3.59	1.84
Peri-urban	8,508,705	9,906,725	11,554,282	1.52	1.47
Rural	9,560,135	10,018,206	9,646,724	0.47	-0.36
Nepal	**22,658,579**[11]	**26,494,504**	**29,164,578**	**1.56**	**0.92**

Source: Population Censuses 2001-2021, NSO

[11] The population by geographic disaggregation is utilized based on the total population enumerated in 2001 population census as a result of 962 missing wards. However, some indirect estimates at aggregated level are available for the total population used elsewhere in this report.

Map 2: Annual population growth rate by Local Level in Nepal 2021



3.5 Municipal population according to various functional hierarchies

3.5.1 Municipal population according to population size/class

The majority of the municipal population (59.4%) live in medium size municipalities, with populations ranging from 50,000 to 200,000. These municipalities account for slightly less than half (135) of the country's 293 municipalities of the country. Furthermore, a quarter of the municipal population (26.1%) live in smaller municipalities with populations less than 50,000. These small municipalities form the majority (151) of the country's municipalities. Only a small proportion of the municipal population (14.4%) live in large municipalities which exceed populations of 200,000, with large municipalities are counting for few (7) of the total number.

Table 5: Municipal population according to population size/class

Population size	Census 2001				Census 2011			
	No.	%	Population	%	No.	%	Population	%
<25,000	20	34.5	397,578	12.3	10	17.2	213,194	4.7
25,000-50,000	22	37.9	771,057	23.9	21	36.2	689,696	15.2
50,000-100,000	11	19.0	788,937	24.4	17	29.3	1,182,522	26.1
100,000-200,000	4	6.9	598,461	18.5	6	10.3	738,455	16.3
200,000-300,000	0	0.0	0	0.0	3	5.2	696,668	15.4
>=300,000	1	1.7	671,846	20.8	1	1.7	1,003,285	22.2
Total	**58**	**100**	**3,227,879**	**100**	**58**	**100**	**4,523,820**	**100**

Population size	Admin. 2015				Census 2021[12]			
	No.	%	Population	%	No.	%	Population	%
<25,000	58	26.7	1,109,771	9.9	34	11.6	673,503	3.5
25,000-50,000	101	46.5	3,634,976	32.4	117	39.9	4,324,774	22.6
50,000-100,000	40	18.4	2,703,627	24.1	105	35.8	7,004,087	36.7
100,000-200,000	12	5.5	1,569,508	14.0	30	10.2	4,339,393	22.7
200,000-300,000	4	1.8	878,787	7.8	4	1.4	1,010,937	5.3
>=300,000	2	0.9	1,327,368	11.8	3	1.0	1,745,172	9.1
Total	**217**	**100**	**11,224,037**	**100**	**293**	**100**	**19,097,866**	**100**

Source: Population Censuses 2001-2021, NSO

In 2001, a majority of municipalities, namely 42 out of 58, recorded a population of up to 50,000 consisting of 36.2 percent of the total urban population. However, a shift in the range was seen in 2011, where 38 municipalities were seen to have a population between 25,000 and 100,000, accounting for 41.3 percent of total urban population. An increase in the number of sub-metropolitan cities with a population between 200,000-300,000 was also observed in 2011, containing 15.4 percent of the urban population.

With the federal restructuring in 2015, the dominance of moderate scale municipalities with populations ranging between 25,000–100,000 was made prominent with 222 out of 293 municipalities seen to contain 59.3 percent of the total urban municipal population.

[12] 2021 population does not include institutional population.

3.5.2 Municipal population according to population density class

Around two-thirds (65.9%, 193 out of a total 293) of the country's municipalities show a very low population density of less than 5 ppHa, indicating primarily rural characteristics of these municipalities.

Additionally, around one-fifth of municipalities (20.5%, 60 out of a total 293) show a population density of 5-10 ppHa, which may indicate either that these municipalities are in the process of urbanization or are urbanized with possession of a large tract of natural resource areas, such as forests, among others.

Only a small proportion of municipalities – 36 out of a total 293, or 12.3 percent – show substantial population densities of 10-50 ppHa and 4 out of 293 municipalities (1.3%) have a density exceeding 50 ppHa, indicating that these municipalities are fast urbanizing.

Table 6: Municipal population according to population density class, 2001-2021

Population	Census 2001				Census 2011				Census 2021[13]			
Density (pop/ha)	No.	%	Population	%	No.	%	Population	%	No.	%		%
<3	6	10.3	169815	5.3	4	6.9	161421	3.6	133	45.4	5819944	30.5
3-5	10	17.2	340359	10.5	5	8.6	120605	2.7	60	20.5	3583275	18.8
5-10	17	29.3	662129	20.5	16	27.6	811085	17.9	60	20.5	4426067	23.2
10-15	10	17.2	377349	11.7	10	17.2	561536	12.4	22	7.5	1735634	9.1
15-30	8	13.8	478885	14.8	11	19.0	559821	12.4	10	3.4	1406089	7.4
30-100	4	6.9	291962	9.0	9	15.5	995681	22.0	5	1.7	891223	4.7
>=100	3	5.2	907380	28.1	3	5.2	1313671	29.0	3	1.0	1235634	6.5
Total	**58**	**100**	**3227879**	**100**	**58**	**100**	**4523820**	**100**	**293**	**100**	**19097866**	**100**

Source: Population Censuses 2001-2021, NSO

Between 2001 and 2011, the number of municipalities with population densities less than 5 ppHa decreased from 16 to the figure of 9, while municipalities with densities between 5-10 ppHa appeared to be more greatly represented. From 2001 to 2011, the population in municipalities with densities of 30 ppHa and over increased from 37.1 to 51 percent, indicating urbanization and denser settlement patterns during this period, however the rate showed a decrease to 11.2 percent in 2021.

[13] 2021 population does not include institutional population.

Table 7: Municipal population, area, and density by census year, 2001-2021

Municipality Type	Census 2001			Census 2011			Census 2021		
	Population	Area (ha)	Density	Population	Area (ha)	Density	Population	Area (ha)	Density
VDC/Gaunpalika	19,430,700	14,137,070	1.4	21,970,684	14,141,070	1.6	9,867,790	9,340,260	1.1
Municipalities	**3,227,879**	**327,733**	**9.8**	**4,523,820**	**327,733**	**13.8**	**19,296,788**	**4,402,758**	**4.4**
Municipality	1,957,572	307,780	6.4	2,702,885	302,966	8.9	14,709,034	4,041,883	3.6
Sub-Metropolitan City	598,461	15,008	39.9	817,650	19,822	41.2	1,972,831	241,692	8.1
Metropolitan City	671,846	4,945	135.9	1,003,285	4,945	202.9	2,614,923	119,183	21.4
Total	**22,658,579**	**14,464,804**	**1.6**	**26,494,504**	**14,468,804**	**1.8**	**29,164,578**	**13,743,018**	**2.1**

Source: Population Censuses 2001-2021, NSO

Between 2001 and 2011, population density is generally seen to increase across all municipal categories. However, with the restructuring in 2015 and changes in administrative boundaries with increased areas of the local bodies, likely resulting in the decrease in density made evident across all categories in 2021. For example, the metropolitan cities show the highest density growth from 135.9/ha in 2001 to 202.9/ha in 2011 – with a +49.3 percent increase observed – yet this rate dropped to 21.4/ha in 2021, reducing by the significant rate of -89.4 percent. The metropolitan cities with an increase in area due to annexation of VDCs and adjoining municipalities resulted in decreased recorded density, and likewise for other municipalities.

3.5.3 Municipal population according to the annual growth rate class

In 2021, a negative annual growth rate (AGR<0) is observed in one out of every four (73 of 293) municipalities, indicating that these municipalities are declining with potential out-migration. Another quarter (73 of 293) of municipalities show a growth rate of 0-1, indicating that these municipalities had either largely stagnant populations or that the populations grew only nominally, primarily due to natural increase. Of the remaining municipalities, 104 out of 293 saw modest (AGR 1-2) growth and the smallest proportion (43 out of 293) experienced a more rapid (AGR >2) rate of population growth.

Table 8: Municipal population according to the annual growth rate class, 2011-2021

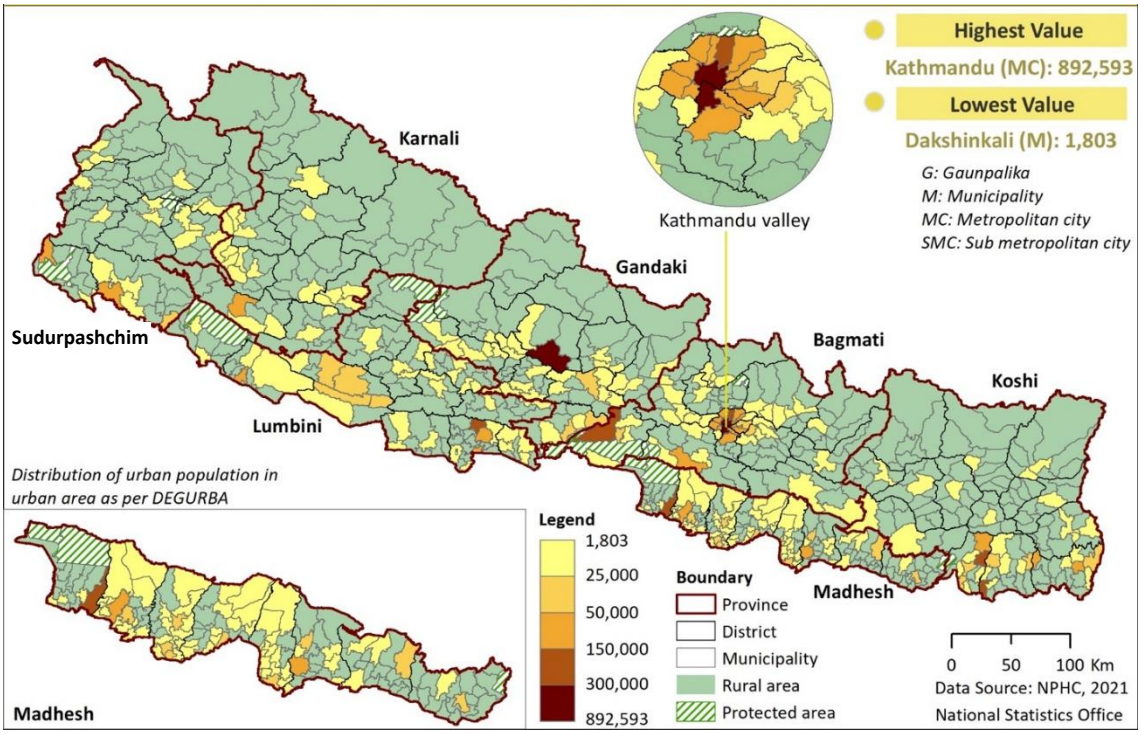
Growth	Census 2011				Census 2021[14]			
rate (%)	No.	%	Population	%	No.	%	Population	%
<0	1	1.7	17,427	0.4	73	24.9	3,136,239	16.4
0-1	3	5.2	73,321	1.6	73	24.9	3,669,661	19.2
1-2	11	19.0	368,735	8.2	104	35.5	6,669,128	34.9
2-3	20	34.5	1,371,080	30.3	23	7.8	3,050,583	16.0
>=3	23	39.7	2,693,257	59.5	20	6.8	2,572,255	13.5
Total	**58**	**100**	**4,523,820**	**100**	**293**	**100**	**19,097,866**	**100**

Source: Population Censuses 2011-2021, NSO

[14] 2021 population does not include institutional population.

In 2011, 23 out of 58 municipalities showed a growth rate above 3 percent, followed by a further 20 municipalities showing a growth rate between 2 to 3 percent, reflecting a rapid rate of urbanization. In 2021, only 43 out of 293 municipalities showed a growth rate above a rate of 2 percent.

Map 3: Population distribution by municipality in Nepal 2021



3.6 Municipal population characteristics

Two-thirds (66.6%) of municipal populations belong to usually economically productive age group (working age population of 15-64 years). Of this rate, the share of youth (15-39 years) is 43.61 percent and mature adults (40-64 years) is 22.94 percent. The share of the aged population (65+) is at the lower rate of 6.6 percent, while the share of children (0-14 years) – a population who are usually dependent – is at the rate of 26.81 percent.

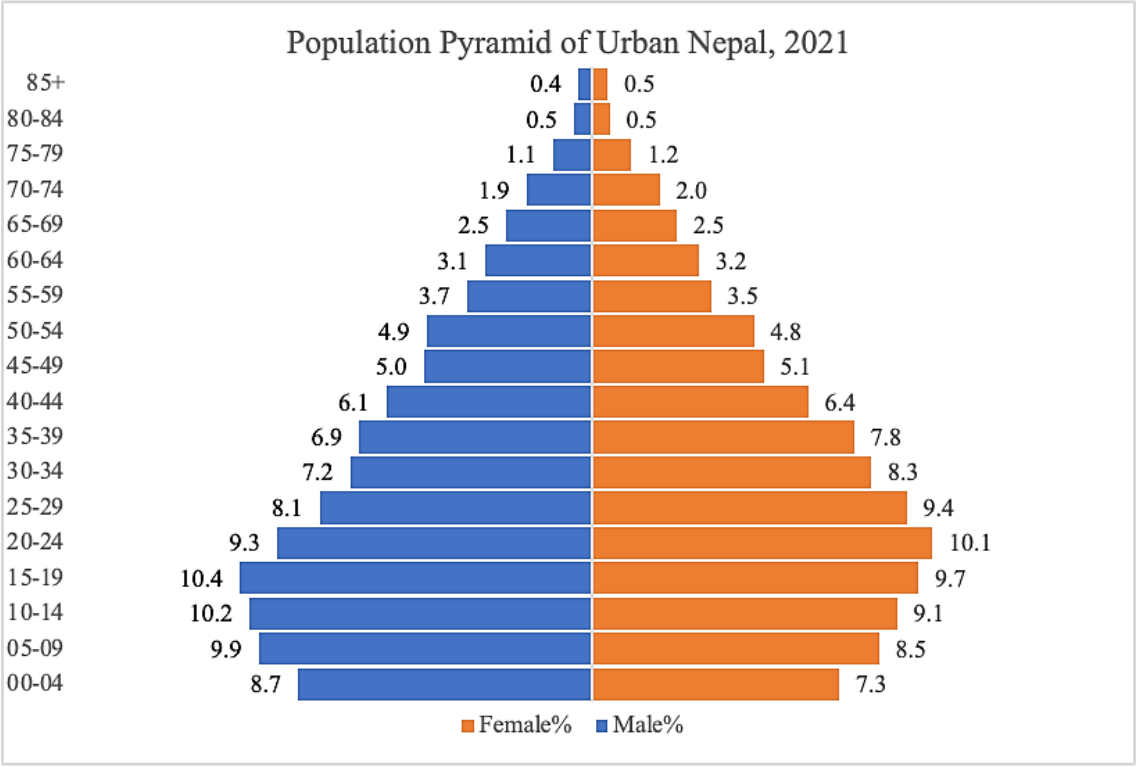
The share of male and female populations in the municipalities shows a unique trend. The proportion of the male population is higher than that of the female population in the age group of 19 years and below. Beyond this age cohort – despite an exception observed in the 55-59 years group – the share of the male population is generally lower than the female population, indicating a potentially higher incidence of male absentees seeking employment opportunities abroad.

Table 9: Municipal population according to age cohort

Age Group (Years)	Municipality Total	%	Male	Female	Sex ratio	Sex ratio Nepal
00-04	1,547,101	8.02	824,323	722,778	114.05	112.34
05-09	1,774,077	9.19	934,436	839,641	111.29	109.10
10-14	1,852,039	9.60	960,918	891,121	107.83	105.80
15-19	1,940,957	10.06	987,059	953,898	103.48	101.54
20-24	1,878,407	9.73	882,666	995,741	88.64	87.79
25-29	1,683,327	8.72	762,951	920,376	82.90	83.93
30-34	1,493,100	7.74	677,051	816,049	82.97	83.76
35-39	1,419,444	7.36	652,295	767,149	85.03	84.82
40-44	1,209,833	6.27	577,363	632,470	91.29	90.12
45-49	974,427	5.05	471,193	503,234	93.63	91.85
50-54	938,060	4.86	463,564	474,496	97.70	96.00
55-59	698,332	3.62	349,650	348,682	100.28	99.85
60-64	611,219	3.17	297,728	313,491	94.97	95.16
65-69	487,835	2.53	239,026	248,809	96.07	96.88
70-74	381,533	1.98	182,222	199,311	91.43	92.04
75-79	222,031	1.15	106,283	115,748	91.82	93.85
80-84	102,776	0.53	49,194	53,582	91.81	94.08
85+	82,290	0.43	36,623	45,667	80.20	82.35
Total Urban	**19,296,788**	100.00	**9,454,545**	**9,842,243**	**96.06**	**95.59**

Source: Population Census 2021, NSO

Figure 1: Population Pyramid of Urban Population in Nepal, 2021



Compared to the national average of 19.5 percent, Bagmati, Koshi, and Gandaki provinces show a relatively higher share of populations born in other districts at the respective rates of 34.9 percent, 21.1 percent, and 20.9 percent. In-migration trends in these provinces are likely to be significant. Sudurpashchim and Lumbini provinces, with respective populations of 17.6 percent and 17.5 percent who are born in other districts, indicate potentially modest in-migration trend in the aforementioned provinces. In comparison, at 8.6 percent and 7.8 percent respectively, Karnali and Madhesh provinces show comparatively smaller populations born in other districts which may indicate limited and selective in-migration trends in the provinces.

The data indicates that metropolitan cities have the highest proportion of both populations who are born in other districts (41.2%) and foreign-born populations (4.1%), followed by sub-metropolitan cities (28.7% born in other districts and 3.2% foreign-born), and the municipality-level region (22% born in other districts and 2.3% foreign-born). In comparison, Gaunpalika-level data shows a proportionally smaller rate of populations born in other districts at only 8.3 percent, which is far less than the national average of 19.5 percent, and a same trend is seen among the rate of foreign-born populations, which account for 2.3 percent compared to the

national average of 2.5 percent. This may potentially show that in-migration to Gaunpalikas may be a limited and selective rather than a general trend.

By geographical region, Kathmandu Valley shows the largest share of the population who are born in other districts (53.2%); a figure far higher than the national average of 19.5 percent, indicating high in-ward migration to the Valley region. The shift in population from one local Valley level to another – or born in 'other local level' – appears to be relatively small, indicated by a rate of 6 percent compared the national average of 9 percent. Inner Tarai shows the second highest share of the population born in other districts (24.6%), indicating significant in-ward migration. The population shift between the local levels within the Inner Tarai also appears to be small, as indicated by the 8.7 percent of the population who are born at other local level. In comparison, the rate of Tarai's population who are born in other districts is 17.3 percent, which is slightly less than national average of 19.5 percent. Conversely, the foreign-born population in Tarai is at a rate of 4.2 percent, which is significantly higher than the national average of 2.5 percent, and the population shift between Local Levels in Tarai (9.2%) is also marginally higher than the national average (9%). The data therefore tends to indicate that migration to Tarai is potentially contributed to by shifts of population from the Hill and Mountain zones, through international migration from bordering India and through shifts of population from one local level to another within Tarai itself.

Table 10: Population by place of birth

Boundary	Population	Same local level	Other local level	Other districts	Foreign	Not stated
Province						
Koshi	4,961,412	67.0	9.0	21.1	2.9	0.03
Madhesh	6,114,600	77.1	11.3	7.8	3.9	0.01
Bagmati	6,116,866	55.5	8.0	34.9	1.5	0.01
Gandaki	2,466,427	65.8	11.4	20.9	1.7	0.12
Lumbini	5,122,078	71.2	7.6	17.5	3.7	0.04
Karnali	1,688,412	85.1	6.0	8.6	0.3	0.04
Sudurpashchim	2,694,783	73.3	8.0	17.6	1.1	0.03
Ecological Belt						
Mountain	2683806	84.4	9.0	6.1	0.4	0.04
Hill	6299434	77.8	10.0	11.2	0.8	0.06
Inner Tarai	3294877	65.3	8.7	24.6	1.4	0.04
Tarai	13861075	69.4	9.2	17.3	4.1	0.02
Kathmandu Valley	3025386	38.8	6.0	53.2	2.0	0.01

Boundary	Population	Same local level	Other local level	Other districts	Foreign	Not stated
Municipality Type						
Gaunpalika	9,867,790	81.2	8.2	8.3	2.3	0.04
Municipalities	**19,296,788**	**62.8**	**9.3**	**25.2**	**2.6**	**0.03**
Municipality	14,787,920	65.5	10.1	22.0	2.3	0.03
Sub-Metropolitan City	1,953,289	60.2	7.9	28.7	3.2	0.02
Metropolitan City	2,555,579	48.9	5.8	41.2	4.1	0.03
Nepal	**29,164,578**	**69.0**	**9.0**	**19.5**	**2.5**	**0.03**

Source: Population Censuses 2021, NSO

This data in table 11 presents findings on Nepal's internally migrated population in 2021, disaggregated by sex, ecological belt, and province. It details the total number of migrants within each category and breaks down the migration flow based on the type of administrative unit of origin and destination: Gaunpalika (administrative rural area) to Gaunpalika (G-G), Municipality (administrative urban area) to Gaunpalika (M-G), Gaunpalika to Municipality (G-M), and Municipality to Municipality (M-M).

Nepal recorded a total migrated population of nearly 2 million (1,994,996) in 2021. The dominant national migration pattern is Gaunpalika to Municipality (G-M), accounting for 51.3 percent of all internal migrants. This highlights a significant trend of movement towards urban centres. The second most common flow is M-M migration which is seen at a rate of 32.8 percent. G-G migration constitutes 12 percent of the total migration patterns and M-G migration is the least commonly observed pattern, representing only 3.9 percent of migrants.

Overall, female migration (1,213,518) significantly outnumbers male migration (781,478), accounting for approximately 61 percent of the total migrated population. While both sexes show rural-to-urban migration as the primary flow (52.2% for males and 50.8% for females), notable differences exist. Males occupy a higher proportion of urban-to-urban migration (36.8% compared to 30.2% for females), whereas females exhibit a substantially higher rate of rural-to-rural migration (14.8% compared to 7.5% for males), potentially reflecting patterns related to marriage migration. Urban-to-rural migration is seen at a lower rate for both sexes; however, slightly increased among female populations (at 4.3% compared to 3.5% for males).

The Hill accounts for the largest volume of migrants (1,057,100), followed by the Tarai (881,261), and the Mountain (56,635) regions. The Mountain shows a distinct pattern with high rural-to-rural migration (37.6%) which is almost equal to its rural-to-urban flow (37.3%). Urban-to-urban migration is the lowest in the Mountain (13.2%). Migration in the Hill reflects the national trend yet a higher proportion of urban-to-urban migration (38.5%) is seen compared to the national

average. Rural-to-urban migration remains dominant in this zone (48.6%). In Tarai, the strongest rural-to-urban trend (55.5%) is exhibited, showing a rate which is significantly higher when compared to the other ecological belts. Rural-to-rural (13.5%) and urban-to-urban (27.1%) migration flows are less pronounced in Tarai compared to the Hill or the Mountain.

Bagmati Province accounts for the largest share of the migrated population by a significant margin (805,646), likely driven by the concentration of urban opportunities in the Kathmandu Valley. Karnali Province has the lowest number of migrants (67,698). G-M migration is the dominant flow across all of the provinces, ranging from 49.7 percent in Bagmati to 55.1 percent in Sudurpashchim.

M-M migration is exceptionally high in Bagmati (44.9%), reflecting its highly urbanized nature. This pattern is less prominent in other provinces, particularly Lumbini (22.3%), Karnali (23.0%), and Sudurpashchim (23.1%). G-G migration shows considerable variation, being the highest in Lumbini (20.7%) and Karnali (19.4%) and the lowest in Bagmati (4.0%). M-G migration is consistently low across all provinces, with a particularly minimal rate observed in Bagmati (1.4%).

The data clearly indicates a strong trend of G-M migration across Nepal, representing a primary internal migration flow for both sexes and in nearly all geographic subdivisions. Significant M-M movement also contributes substantially to internal migration, especially in highly urbanized areas such as Bagmati Province. Female migration figures are considerably higher than those for males, with distinct patterns particularly visible in rural-to-rural flows. Geographic variations are further pronounced. The Hill is seen to contribute to the highest migrated population of all the ecological zones, while Bagmati Province shows the largest proportion among the provinces. Unique patterns are observed in the Mountain and Tarai zones, where comparatively high G-G and G-M pulls are witnessed, respectively. Urban-to-rural migration remains a minor component of internal population movement.

Table 11: Internal cross-migration between Gaunpalika and Municipality, 2021

Area	Migrated Population	Gaunpalika-Gaunpalika (%)	Municipality-Gaunpalika (%)	Gaunpalika-Municipality (%)	Municipality-Municipality (%)
Sex					
Male	781,478	7.5	3.5	52.2	36.8
Female	1,213,518	14.8	4.3	50.8	30.2
Ecological Belt					
Mountain	56,635	37.6	11.9	37.3	13.2
Hill	1,057,100	9.3	3.6	48.6	38.5
Tarai	881,261	13.5	3.9	55.5	27.1
Province					
Koshi	325,325	17.3	6	51	25.6

Area	Migrated Population	Gaunpalika-Gaunpalika (%)	Municipality-Gaunpalika (%)	Gaunpalika-Municipality (%)	Municipality-Municipality (%)
Madhesh	181,877	16.1	4.8	54.8	24.3
Bagmati	805,646	4	1.4	49.7	44.9
Gandaki	183,017	13.1	5.8	53.1	28.1
Lumbini	289,725	20.7	5.5	51.5	22.3
Karnali	67,698	19.4	7.5	50.1	23
Sudurpashchim	141,708	16.6	5.3	55.1	23.1
Nepal	**1,994,996**	**12**	**3.9**	**51.3**	**32.8**

Source: Population Census 2021, NSO

3.7 Top10 municipalities: a trend analysis

Despite its declining population, Kathmandu – the nation's capital city – is consistently ranked as the top municipality according to population size in the country when comparing data from the period between 2001 and 2021. The population of Kathmandu has fluctuated from a figure of 671,846 in 2001, increasing to 1,003,285 in 2011 and decreasing to 862,400 in 2021. Following Kathmandu, Pokhara – the capital city Gandaki Province – contains the second largest population per municipality at the figure of around half a million. Bharatpur in Chitwan Valley has now emerged as a major urban centre and is placed as third with regard to municipality population figure. Between 2001 and 2011, Lalitpur and Birgunj consistently feature as top ten ranked municipalities. However, Biratnagar – the capital city of Koshi Province – shows a continuous decline across the period, despite remaining within the top ten ranked municipalities per population. In 2001, Biratnagar ranked as the second largest municipality after Kathmandu, yet ranks as sixth in 2021. Itahari, strategically located at the intersection of the East-West and Koshi Highways, has outpaced Dharan with regard to population size. In Lumbini, Ghorahi of Dang Valley is among top ten municipalities, ranking higher than Butwal. Similarly, Dhangadhi – the capital city of Sudurpashchim – is seen to have outpaced Bhimdatta with regard to population size. The capital city of Madhesh- Janakpurdham has resurged to be ranked within the top ten municipality populations in 2021, despite its omission in the ranking in 2011.

The trend of top ranked municipalities shows that urbanization is much more concentrated in cities such as Kathmandu, Lalitpur, and Pokhara of the Hill Valleys, Bharatpur and Ghorahi in Inner Tarai, and in selected cities such as Biratnagar, Birgunj, and Itahari at the industrial corridor and the newly designated provincial capital cities such as Janakpurdham and Dhangadhi in Tarai. The associated historical, economic, and political contexts present in and related to these cities tend to be key drivers of their prominence and resurgence.

Table 12: Top 10 municipalities ranked according to population by census year, 2001-2021

	Census 2021		Admin. 2015		Census 2011		Census 2001	
Rank	Municipality	Pop	Municipality	Pop	Municipality	Pop	Municipality	Pop
1	Kathmandu	862,400	Kathmandu	1,003,285	Kathmandu	1,003,285	Kathmandu	671,846
2	Pokhara	513,504	Pokhara	324,083	Pokhara	264,991	Biratnagar	166,674
3	Bharatpur	369,268	Lalitpur	261,789	Lalitpur	226,728	Lalitpur	162,991
4	Lalitpur	294,098	Birgunj	207,980	Biratnagar	204,949	Pokhara	156,312
5	Birgunj	272,382	Biratnagar	204,949	Bharatpur	147,777	Birgunj	112,484
6	Biratnagar	243,927	Bharatpur	204,069	Birgunj	139,068	Dharan	95,332
7	Ghorahi	200,530	Janakpur	169,287	Butwal	120,982	Bharatpur	89,323
8	Dhangadhi	198,792	Hetauda	154,660	Dharan	119,915	Bhimdatta	80,839
9	Itahari	197,241	Nepalgunj	148,714	Bhimdatta	106,666	Butwal	75,384
10	Janakpurdham	194,556	Itahari	143,786	Dhangadhi	104,047	Janakpur	74,192

Source: Population Censuses 2001-2021, NSO

3.8 Degree of urbanization according to administrative boundaries

The data shows that, according to the DEGURBA classification (NSO, 2023), national urbanization level – or the population living in urban areas is 27.3 percent. People living in peri-urban areas - which contains mixed characteristics of both urban and rural areas is 39.6 percent, while 33.1 percent live in rural areas.

DEGURBA has defined urban areas consisting of the following characteristics: (i) urban centres with a population greater than 50,000, a density greater than 15 ppHa, built up areas greater than 50 percent, and measured in contiguous 4 grids (1 km by 1 km); and (ii) urban clusters with populations of 5,000-50,000, density greater than 15 ppHa (dense) and density 3-15 ppHa (semi dense), and measured in 4 grids contiguity. The peri-urban area is defined to consist of density of 3-15 ppHa, measured in 8 grids contiguity, yet without population thresholds. The rural area is defined to consist of population less than 5000 and density less than 3 ppHa and measured in 8 grids contiguity.

Among the provinces, Bagmati shows a significant urbanization level at 56.2 percent and is the highest among the provinces. Gandaki (26.2%), Koshi (22.87%), and Madhesh (20.7%) have relatively low urbanization levels. The urbanization level in the remaining provinces of Lumbini (16.8%), Karnali (15.9%), and Sudurpashchim (13.1%) is limited. Despite limited or low urbanization levels, Madhesh, Lumbini, Koshi, and Sudurpashchim provinces demonstrate large peri-urban populations at 73.5, 52.2, 41.1, and 30.9 percent, respectively. This data indicates that these provinces have a relatively large distribution of potentially denser village settlements, likely with significant population density but lagging with regard to population size and urban

facilities and amenities. This may also indicate that some degree of urbanization could be taking place in the outlying areas of relatively larger urban settlements. Karnali shows a small peri-urban population at 4.4 percent, indicating that overall urbanization is limited in the province.

By municipality type, the urbanization level is the highest by metropolitan city at 81 percent, followed by the rate of 53.8 percent at sub-metropolitan city level. The urbanization level is comparatively lower in municipalities at the rate of 28.5 percent, followed by 5.9 percent in Gaunpalikas.

Table 13: Population by degree of urbanization, 2021

Boundary	Population	Urban	%	Peri-urban	%	Rural	%	Non-Rural%
Province								
Koshi	4,961,412	1,134,618	22.9	2,036,740	41.1	1,790,054	36.1	63.9
Madhesh	6,114,600	1,266,375	20.7	4,491,089	73.5	357,136	5.8	94.2
Bagmati	6,116,866	3,436,544	56.2	877,402	14.3	1,802,920	29.5	70.5
Gandaki	2,466,427	646,829	26.2	570,478	23.1	1,249,120	50.6	49.4
Lumbini	5,122,078	859,002	16.8	2,672,158	52.2	1,590,918	31.1	68.9
Karnali	1,688,412	267,596	15.9	74,075	4.4	1,346,741	79.8	20.2
Sudurpashchim	2,694,783	352,608	13.1	832,340	30.9	1,509,835	56.0	44.0
Ecological Belt								
Mountain	2,683,806	311,134	11.6	75339	2.8	2,297,333	85.6	14.4
Hill	6,299,434	1,071,640	17.0	600,161	9.5	4,627,633	73.5	26.5
Inner Tarai	3,294,877	786,659	23.9	1,014,636	30.8	1,493,582	45.3	54.7
Tarai	13,861,075	3,018,511	21.8	9,665,754	69.7	1,176,810	8.5	91.5
Kathmandu Valley	3,025,386	2,775,628	91.7	198,392	6.6	51,366	1.7	98.3
Municipality Type								
Gaunpalika	9867790	585015	5.9	3556529	36.0	5726246	58.0	42.0
Municipality	14709034	4198656	28.5	6791724	46.2	3718654	25.3	74.7
Sub-Metropolitan City	1972831	1060995	53.8	768405	38.9	143431	7.3	92.7
Metropolitan City	2614923	2118906	81.0	437624	16.7	58393	2.2	97.8
Nepal	**29,164,578**	**7,963,572**	**27.3**	**11,254,024**	**39.6**	**9,646,724**	**33.1**	**66.9**

Source: Population Censuses 2021 & DEGURBA Classification, 2023, NSO

With an urbanization level at 91.7 percent, the Kathmandu Valley is by far the most urbanized area in the country. The level of urbanization is relatively small in Inner Tarai (23.9%) and Tarai (21.8%), yet these regions show a large peri-urban population (30.8% and 69.7% respectively). The Hill and Mountain zones show a limited urbanization level at 17 percent and 11.6 percent respectively, with both zones also showing limited peri-urban populations. Excluding the Kathmandu and Pokhara Valleys, the urbanization is otherwise somewhat limited in the Hill and Mountain zones.

Of the total municipalities (293), a majority (51.9%) show limited urbanization levels, or levels reaching less than 20 percent. Of this figure, one-third (34.1%) do not have urban centres and urban clusters which are consistent with DEGURBA standards. 17.8 percent show limited urbanization levels of less than 20 percent. Only almost one-quarter of municipalities (24.2%) have a modest urbanization level of 20 to 40 percent and the remaining one-quarter (23.9%) of municipalities have significant urbanization levels exceeding 40 percent.

Table 14: Categorization of municipalities based on urbanization level, 2021

Urbanization	No. of Municipality		Population		Number of Ward			
Level (%)	Number	%	Number	%	Urban	Peri-urban	Rural	Total
0	100	34.1	4,249,457	22.0	0	514	536	1050
>0-20	52	17.8	3,089,901	16.0	75	359	208	642
20-40	71	24.2	3,830,389	19.8	193	309	374	876
40-60	39	13.3	3,424,115	17.7	200	175	134	509
60-80	13	4.4	1,234,188	6.4	125	48	19	192
80-90	12	4.1	1,850,931	9.6	130	27	2	159
90-100	6	2.1	1,617,807	8.4	100	0	0	100
Total	**293**	**100**	**19,296,788**	**100**	**823**	**1,432**	**1,273**	**3,528**

Source: Population Censuses 2021, NSO

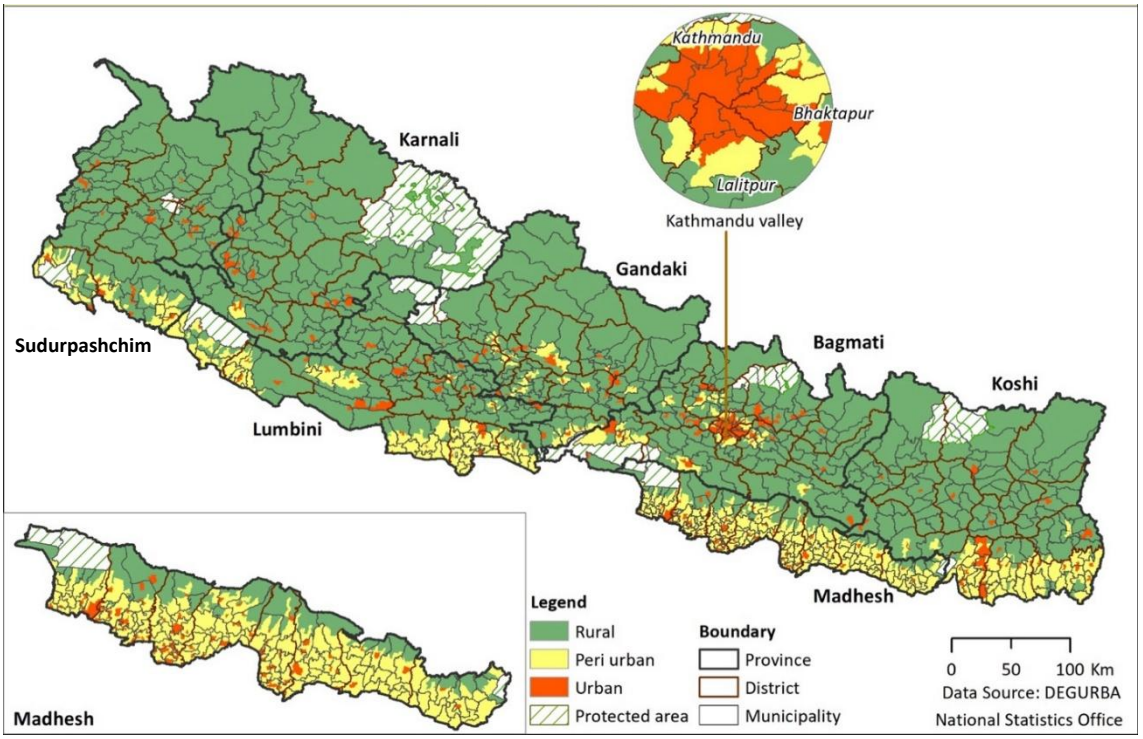
Of the total 753 Palikas (Local Levels), 487 (64.7%) show an urbanization level of zero, a figure reflecting 62.6 percent of the total population. There are 139 wards in Gaunpalikas which show urban categorization and 17 Gaunpalikas with a level of urbanization above 40 percent, containing only 2.3 percent of urban population.

Table 15: Categorization of Local Levels based on urbanization level, 2021

Urbanization	No. of Municipality		Population		Number of Ward			
Level (%)	Number	%	Number	Number	%	Number	Number	%
0	487	64.7	12,088,279	62.6	0	1,025	2,707	3,732
>0-20	75	10.0	3,805,574	19.7	99	417	297	813
20-40	104	13.8	4,699,748	24.4	249	385	483	1,117
40-60	50	6.6	3,699,205	19.2	235	187	172	594
60-80	18	2.4	1,350,338	7.0	142	55	22	219
80-90	13	1.7	1,903,627	9.9	137	27	4	168
90-100	6	0.8	1,617,807	8.4	100	0	0	100
Total	**753**	**100**	**29,164,578**	**100**	**962**	**2,096**	**3,685**	**6,743**

Source: Population Censuses 2021 & DEGURBA Classification, 2023, NSO

Map 4: Degree of urbanization in Nepal 2021



3.9 Urbanization level of Nepal compared with other SAARC countries

Nepal's urbanization level is at a rate of 27.3 percent, which is a moderate score compared to other SAARC countries. Nepal shows a significant peri-urban population (39.6%), a finding which is unique among the other countries in the region. In South Asia, when omitting Sri Lanka and India due to lack of available population data within the past 10 years, Maldives shows the highest level of urbanization (42%) in relation to its HDI (0.762). Bhutan and Bangladesh further show associated trends between the level of urbanization and HDI ranking.

Table 16: Urbanization level of Nepal compared with other SAARC countries[15]

Country	National population	Urbanization level (%)	Data source	HDI 2022 (Rank)
Nepal	29,164,578	Urban: 27.3 Peri-urban: 39.6 Rural: 33.1	(NSO, 2021)	0.601 (146th)
Afghanistan	32,890,171	Urban: 24.4 Rural: 71.0 Nomadic: 4.6	(NSIA, 2022)	0.462 (182nd)
Bangladesh	165,158,616	Urban: 31.5 Rural: 68.5	(BBS, 2022)	0.670 (129th)
Bhutan	727,145	Urban: 37.8 Rural: 62.2	(NSB, 2017)	0.681 (125th)
India	1,210,854,977	Urban: 31.2 Rural: 68.8	(RGCC, 2011) (MOHUA, 2011)	0.644 (134th)
Maldives	515,122	Urban: 42	(MBS, 2022) (World Bank)	0.762 (87th)
Pakistan	241,499,431	Urban: 38.9 Rural: 61.1	(PBS, 2023)	0.540 (164th)
Sri Lanka	20,271,464	Urban: 18.3 Rural: 77.3 Estate: 4.4	(DCS, 2012)	0.780 (78th)

3.10 Urban primacy

Urban primacy refers to the dominance of a single city within a country or region, often with regard to a significantly larger population, rate of economic activity, and political influence compared to other cities. This phenomenon is typically measured using the urban primacy index, which compares the population of the largest city to the next largest cities (e.g., the two-city or four-city index). A high primacy index indicates that the largest city overshadows others, suggesting uneven development, centralized resources, and potential challenges such as overcrowding or regional disparities. Examples include Bangkok in Thailand or Buenos Aires in Argentina, these cases demonstrating instances in which the capital cities far outstrip secondary cities in size and national importance.

[15] It is important to note that the year of data, levels of categorization and sources referenced for the eight countries varies. So, a proxy comparison is done to derive a broader picture. This demands for harmonized and comparable urban data set, and need of replicating application of degree of urbanization in other countries as well.

Table 17: Urban Primacy Index and population concentration, 2011-2021

Variable	Urban Population Concentration (2011)	Urban Population Concentration (2021)	Remarks
Two city index (P1/P2)	3.79	1.68	Kathmandu and Pokhara
Two City Index (taking Kathmandu valley)	9.5	5.9	Kathmandu Valley and Pokhara Index decline by 38 percent between 2011 and 2021
Four city index P1/(P2+P3+P4)	1.44	0.73	2011: Kathmandu, Pokhara, Lalitpur, Biratnagar 2021: Kathmandu, Pokhara, Bharatpur, Lalitpur
Four City Index (taking Kathmandu Valley)	3.6	2.57	2011: Kathmandu Valley, Pokhara, Lalitpur, Biratnagar 2021: Kathmandu Valley, Pokhara, Bharatpur, Lalitpur Index decline by 28 percent between 2011 and 2021
Proportion of total population of Top 10 municipalities compared to total population of all municipalities	53.9	17.52	

Source: Population Censuses 2011-2021, NSO

Interpreting the urban primacy index involves assessing both its magnitude and context. A very high index (e.g., exceeding 2.0 in a two-city comparison) signals extreme concentration, which may reflect historical, political, or economic factors favouring one city. While primacy can drive efficiency and growth, excessive concentration may strain infrastructure, exacerbate inequality, or hinder regional development. Conversely, a lower index suggests a more balanced urban hierarchy, often seen in decentralized economies or federal systems. Policymakers use this index to evaluate spatial equity and guide strategies such as decentralization or investment in secondary cities to promote balanced growth.

In the context of Nepal, the primacy of Kathmandu compared to other cities is declining. For instance, the two-city index comparing the populations of Kathmandu (the largest city) and Pokhara (the second largest) demonstrates this trend, falling from 3.79 in 2011 to just 1.7 in 2021. Conversely, when viewing the Kathmandu Valley as a single urban agglomeration (the country's largest, integrating all 18 municipalities), the two-city index highlights its continued dominance over other cities in Nepal. This stems from the Valley's role as the national capital

region, hosting concentrated specialized education, health, tourism, economic production, and services, alongside functioning as a key transportation and communication hub.

The index for the Valley stood at 9.5 in 2011 and 5.9 in 2021. Using a four-city index highlights the continued dominance of the Kathmandu Valley over other cities. The Valley's population is more than double the combined population of the next three largest cities in the country. This index stood at 3.6 in 2011 and 2.57 in 2021.

The share of the total municipal population concentrated in the top 10 municipalities declined significantly, falling from 53.9 percent in 2011 to just 17.5 percent in 2021. This change is primarily due to the administrative restructuring in 2017, which expanded the number of municipalities from 58 to 293.

CHAPTER 4

URBAN CONDITIONS AND SERVICES

4.1 Urban environment

Exposure is defined as the presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected by climate induced hazards or climate extreme events. The exposed units' physical, biological, socioeconomic, and structural characteristics differentiate sensitivity (MoFE, 2021). A composite sensitivity index is generated in this assessment by combining all of the sectoral sensitivity values. The adaptive capacity is assessed based on the ability of systems, institutions, humans, and other organisms to adapt to potential damage, capitalize on opportunities, or respond to the consequences of climate change. Vulnerability is defined as the difference between sensitivity or susceptibility to harm and a lack of capacity to cope and adapt.

The definitions of environmental factors are referenced from "Vulnerability and Risk Assessment and Identifying Adaptation Options: Sectoral report: Rural and Urban Settlements, Ministry of Forests and Environment" (2021) the data analysis is based on the municipal level result generated by published, which has been made available with support from Oxford Policy Analyst. The description of the terminologies and the analytical approach to conduct vulnerability assessment and derive Representative Concentration Pathways (RCP) are explained in Annex 2.

Nepal is widely exposed to climatic hazards, largely induced by extreme precipitation and temperatures. Flood, landslides, fire, and dry conditions are widely experienced, although exposure to these hazards is modest (score 0.315) potentially due to low urbanization levels and fewer infrastructure assets. Sensitivity is moderate (0.534), and varies according to topography, geology, location, and other social-economic attributes such as household characteristics, literacy, income, poverty. Adaptive capacity score is modest (0.500), owing to potentially limited awareness, institutional capacities, planning practices, and application of planning-building regulations and codes at local level. Vulnerability, which is a function of sensitivity and adaptability, scores at 0.482 nationally and is therefore of significance.

Among ecological regions, vulnerability is high in the Mountain (0.603) and Hill (0.551) regions. It is moderate in Inner Tarai (0.448) and Tarai (0.374) zones. The score is very low in the

Kathmandu Valley (0.069). Climate vulnerability is high in Gaunpalikas (0.592), moderate in municipalities (0.325), and scores very low in sub-metropolitan cities (0.057) and metropolitan cities (0.005). The low vulnerabilities in (sub) metropolitan cities are a likely finding as these are relatively established, matured, capacitated, and resourceful areas which have improved access to infrastructures, employment, education, and health amenities. These conditions are limited in municipality contexts, especially those newly formed after 2011, and are largely absent in Gaunpalikas.

Table 18: Mean values of exposure, sensitivity, adaptability and vulnerability, 2021

Boundary	CEE_ baseline	CEE_RCP 4.5_2030	CEE_RCP 4.5_2050	Change %	CEE_RCP 8.5_2030	CEE_RCP 8.5_2050	Change %
Belt							
Mountain	0.520	0.625	0.639	2.2	0.583	0.646	10.8
Hill	0.594	0.714	0.727	1.9	0.675	0.736	9.2
Inner Tarai	0.589	0.711	0.718	1.0	0.676	0.740	9.4
Tarai	0.617	0.730	0.730	0.0	0.710	0.764	7.7
Kathmandu Valley	0.629	0.770	0.761	-1.1	0.710	0.786	10.7
Municipality Type							
Gaunpalika	0.577	0.691	0.701	1.4	0.656	0.717	9.2
Municipalities	**0.599**	**0.716**	**0.721**	**0.8**	**0.684**	**0.743**	**8.7**
Municipality	0.598	0.715	0.720	0.7	0.683	0.742	8.7
Sub-Metropolitan City	0.656	0.779	0.786	0.9	0.746	0.811	8.6
Metropolitan City	0.589	0.706	0.712	0.9	0.677	0.735	8.5
Nepal	**0.585**	**0.701**	**0.708**	**1.1**	**0.667**	**0.727**	**9.0**

Source: MOFE, 2021

The incidence of extreme climate events in Nepal scores as moderate (0.585) at present. But the incidence of such extreme events will likely increase greatly in the future - in both medium and long-term, regardless of moderate (RCP 4.5) or high (RCP 8.5) climatic variation in temperature and precipitation conditions. The CEE index for RCP 4.5 is 0.701 in 2030, and 0.708 in 2050, while the RCP 8.5 is 0.667 in 2030 and 0.727 in 2050.

The extreme events value in Kathmandu Valley also scores also in the higher end of the scale, regardless of climatic variation and time scale. The incidence of extreme climate events is high

at all local levels. The CEE[16] (for RCP[17] 8.5 in 2050) is 0.717 for Gaunpalikas, 0.742 for Municipalities, 0.811 in sub-metropolitan cities, and 0.735 in metropolitan cities.

Table 19: Mean climate extreme event values of baseline and RCP groups

Boundary	CEE_ baseline	CEE_RCP 4.5_2030	CEE_RCP 4.5_2050	Change%	CEE_RCP 8.5_2030	CEE_RCP 8.5_2050	Change %
Ecological Belt							
Mountain	0.520	0.625	0.639	2.2	0.583	0.646	10.8
Hill	0.594	0.714	0.727	1.9	0.675	0.736	9.2
Inner Tarai	0.589	0.711	0.718	1.0	0.676	0.740	9.4
Tarai	0.617	0.730	0.730	0.0	0.710	0.764	7.7
Kathmandu Valley	0.629	0.770	0.761	-1.1	0.710	0.786	10.7
Municipality Type							
Gaunpalika	0.577	0.691	0.701	1.4	0.656	0.717	9.2
Municipalities	**0.599**	**0.716**	**0.721**	**0.8**	**0.684**	**0.743**	**8.7**
Municipality	0.598	0.715	0.720	0.7	0.683	0.742	8.7
Sub-Metropolitan City	0.656	0.779	0.786	0.9	0.746	0.811	8.6
Metropolitan City	0.589	0.706	0.712	0.9	0.677	0.735	8.5
Nepal	**0.585**	**0.701**	**0.708**	**1.1**	**0.667**	**0.727**	**9.0**

Source: MOFE, 2021

Moderate climate risk (0.255) further prevails nationally in the medium-term (2030), even with regard to moderate climatic variation (RCP 4.5). The climate risk (0.265) will further grow in the longer term (2050) with the greater climatic variation (RCP 8.5).

[16] **Climate Extreme Event (CEE)** refers to incidence of climatic conditions beyond the regular pattern. This is related to rainfall (**rainy** days, very wet days, extreme wet days, consecutive wet days) and temperature conditions (**dry** days, **cool** days, cool nights, **warm** nights, warm days, warm spell duration, and cold spell duration).

[17] Representative Concentration Pathways RCP 4.5, and 8.5 represent extreme climate change scenarios projected - with respect to moderate (RCP 4.5) to relatively high (RCP 8.5) variation in temperature and precipitation conditions. It is projected for the medium-term (2016-2045) and the long-term (2036-2065) corresponding with the 2030s and 2050s. In the RCP 4.5, the average annual temperature change is projected to increase by 0.92°C with a variation of 0.77°C to 1.09°C in the medium term. In the long- term, it is expected to increase by 1.3°C on average with the variation from 1.1°C to 1.53°C. While the average annual precipitation change is projected to increase by 2.1 percent in the medium term, while a 7.9 percent increment is projected in the long term. In the RCP 8.5, the average annual temperature change in the medium term is projected to increase by 1.02°C with a maximum of 1.24°C and a minimum is 0.96°C. In the long-term, the average annual temperature change is projected to increase by 1.82°C with the maximum temperature of 2.09°C and minimum 1.64°C. While the average annual precipitation in medium term is projected to increase by 6.4 percent and by 12.1 percent in the long-term period.

Table 20: Mean Climate Risk Index of baseline and different RCP categories, 2021

Boundary	Risk_ baseline	Risk_20RCP 4.5_2030	Risk_20RCP 4.5_2050	Change %	Risk_20RCP 8.5_2030	Risk_20RCP 8.5_2050	Change %
Ecological Belt							
Mountain	0.171	0.205	0.209	2.0	0.192	0.212	10.7
Hill	0.215	0.258	0.264	2.1	0.243	0.266	9.2
Inner Tarai	0.276	0.333	0.337	1.1	0.317	0.346	9.3
Tarai	0.229	0.270	0.271	0.2	0.262	0.283	7.9
Kathmandu Valley	0.168	0.206	0.203	-1.2	0.190	0.210	10.7
Municipality Type							
Gaunpalika	0.216	0.259	0.263	1.4	0.246	0.269	9.2
Municipalities	**0.208**	**0.249**	**0.251**	**1.0**	**0.237**	**0.258**	**8.9**
Municipality	0.203	0.242	0.245	1.0	0.231	0.252	9.0
Sub-Metropolitan City	0.332	0.390	0.397	1.7	0.377	0.407	8.0
Metropolitan City	0.273	0.328	0.332	1.2	0.314	0.342	8.7
Nepal	**0.213**	**0.255**	**0.258**	**1.2**	**0.243**	**0.265**	**9.1**

Source: MOFE, 2021

4.2 Land use

The arable land[18] is defined as land under temporary crops and is a dominant composition of agricultural land with urbanization usually taking place on this land. During the period of 2011 to 2021, the area of arable land declined by 16.6 percent (358,995 ha) from 2,162,751 ha to 1,803,756 ha.

The stock of arable land is the highest in Madhesh (24.2%). It is followed by Koshi (22.1%). Lumbini and Bagmati's share is at 19.3 percent and 12.9 percent, respectively. Sudurpashchim (9.1%), Gandaki (7%), and Karnali (5.4%) have limited arable land only - indicating limited prospects of large-scale urbanization in these provinces.

During the period of 2011 and 2021, 157,944 ha of arable land declined in Tarai, 154,125 ha in Hill, and 46926 ha in the Mountain. The decline in Hill is potentially dragged by Kathmandu Valley, Pokhara Valley.

A majority of arable land exists in *municipalities* (53.8%) - 48.3 percent in municipality, 3.6 percent in sub-metropolitan city, and 2 percent in metropolitan city. *Gaunpalika* has 46.2

[18] Agricultural land includes (i) arable land (land under temporary crops), (ii) land under permanent crops, (iii) land under permanent pasture, (iv) ponds, and (v) forest and other woodland. Arable land is the dominant composition in agricultural land.

percent. The distribution of arable land tends to indicate that Metropolitan cities and Sub-metropolitan cities have limited capacities for future urban expansion. Urbanization will potentially take place in the municipalities adjoining metropolitan and sub-metropolitan cities, and in selected strategically located municipalities of Inner Tarai, Tarai, and Hill.

Table 21: Agriculture land use (hectare) and inter-census change, 2011-2021

Geographic Area	Land under agriculture holding[19] (ha)			Arable land (ha)		
	2011	2021	Change%	2011	2021	Change%
Province						
Koshi	602,472	532,937	-11.5	499,223	398,773	-20.1
Madhesh	541,268	492,497	-9.0	502,142	437,203	-12.9
Bagmati	328,297	282,292	-14.0	285,423	233,070	-18.3
Gandaki	209,798	173,773	-17.2	163,927	126,429	-22.9
Lumbini	484,678	426,614	-12.0	404,541	347,973	-14.0
Karnali	141,695	117,411	-17.1	118,511	96,934	-18.2
Sudurpashchim	217,430	192,885	-11.3	188,985	163,375	-13.6
Ecological Belt						
Mountain	213,932	177,600	-17.0	177,035	130,109	-26.5
Hill	986,073	839,598	-14.9	756,863	602,738	-20.4
Tarai	1,325,635	1,201,212	-9.4	1,228,853	1,070,909	-12.9
Nepal	**2,525,639**	**2,218,410**	**-12.2**	**2,162,751**	**1,803,756**	**-16.6**

Source: National Sample Census of Agriculture Nepal 2011-2021, NSO

[19] A holding is an *agricultural unit* having area (under crops) greater than or equal to 0.01272 ha (4 anna) in hill or mountain district, or 0.01355 ha (8 dhur) in Tarai. The holding may consist of one or more land parcels located in one or more separate areas within a district. The holding is generally same as a household. Agriculture holding is an economic unit of agriculture production under single management comprising of all lands used wholly or partly for agricultural production. Holding with area less than the above thresholds is categorized as a holding without land (cf. National Sample Census of Agriculture 2021/2022, National Report, p137).

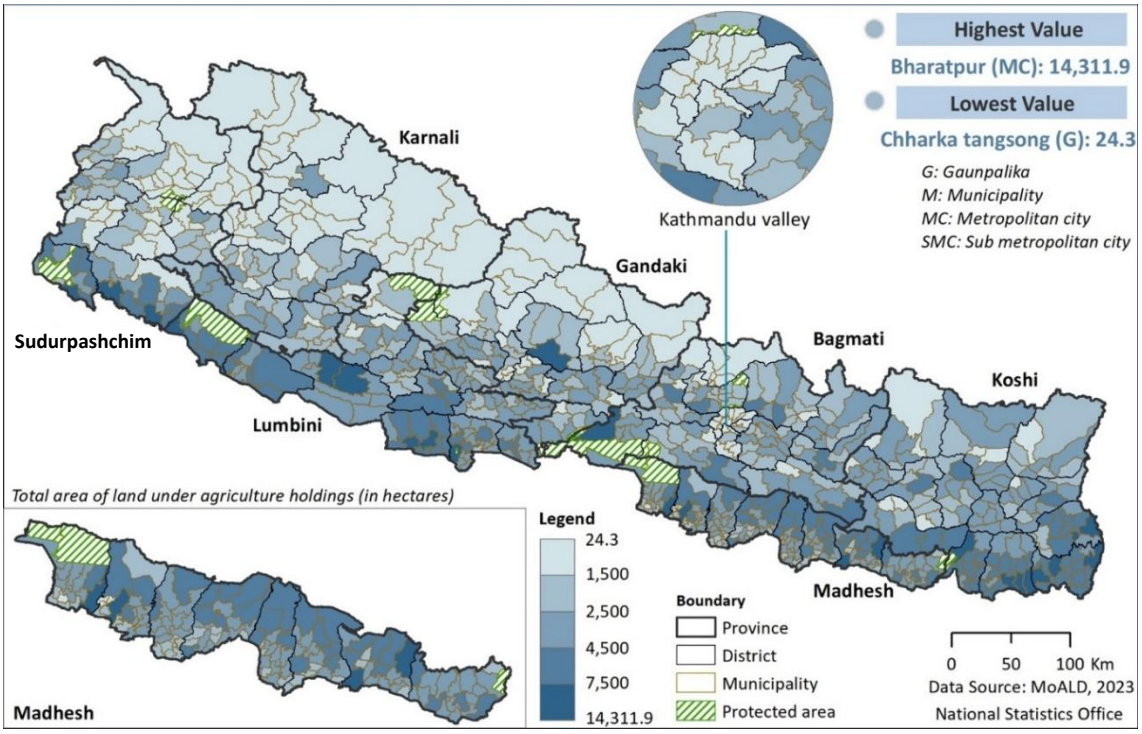
Table 22: Arable land under agriculture holding (hectare), 2021

Geographic Area	Land under Agriculture holding (ha)	Arable land (ha)	Arable land distribution (%)
Province			
Koshi	532,937	398,773	22.1
Madhesh	492,497	437,203	24.2
Bagmati	282,292	233,070	12.9
Gandaki	173,773	126,429	7.0
Lumbini	426,614	347,973	19.3
Karnali	117,411	96,934	5.4
Sudurpashchim	192,885	163,375	9.1
Ecological Belt*			
Mountain	272,901	206,906	11.5
Hill	623,190	424,367	23.5
Inner Tarai	209,642	177,948	9.9
Tarai	1,095,197	980,138	54.3
Kathmandu Valley	17,480	14,397	0.8
Municipality Type			
Gaunpalika	1,050,168	832,787	46.2
Municipalities	**1,168,242**	**970,969**	**53.8**
Municipality	1,055,474	871,339	48.3
Sub-Metropolitan City	72,213	64,086	3.6
Metropolitan City	40,556	35,543	2.0
Total	**2,218,410**	**1,803,756**	**100**

Note: Ecological belt taking the LGOA (2017) classification.

Source: National Sample Census of Agriculture Nepal, 2021/22, NSO

Map 5: Land under agriculture holding by Local Level in Nepal 2023



4.3 Living conditions

4.3.1 Housing materials

❖ **RCC roofs**

Housing with RCC roofs may be considered as an indicator of modernity and wealth. A significant rate of housing with RCC roofs are seen in Bagmati Province at 57.6 percent in 2021. Lumbini follows at 45.4 percent, with Madhesh and Gandaki showing a significant share of 35.2 percent and 34.1 percent, respectively. Sudurpashchim, Koshi, and Karnali have a relatively lower share of housing with RCC roofs at 26.6 percent, 22.2 percent, and 12 percent, respectively.

Housing with RCC roofs is an emerging trend. The proportion is higher in municipalities, and the rate is shown to increase with hierarchy, seen at 40.7 percent at the municipality level, 56.3 percent at sub-metropolitan city level, and 73.5 percent at metropolitan city level in 2021. In comparison, Gaunpalika-level data shows a percentage rate at just 18.6 percent. The proportion is also starkly dominant in Kathmandu Valley at 84.3 percent and in (DEGURBA classified) urban areas at 69.8 percent.

Table 23: Households by housing types of reinforced concrete cement roofing

Boundary	2011 HHs	RCC%	2021 HHs	RCC%	2011-2021 % change
Province					
Koshi	111,075	11.2	264,067	22.2	137.7
Madhesh	147,883	15.9	407,166	35.2	175.3
Bagmati	528,809	41.7	902,451	57.6	70.7
Gandaki	112,899	19.5	225,858	34.1	100.1
Lumbini	254,884	28.8	518,436	45.4	103.4
Karnali	13,301	4.5	43,757	12.0	229.0
Sudurpashchim	50,209	10.7	153,358	26.6	205.4
Ecological Belt					
Mountain	21,172	3.6	99,824	15.3	371.5
Hill	132,519	9.4	309,559	19.9	133.6
Inner Tarai	104,496	17.5	255,425	32.4	144.4
Tarai	512,745	23.2	1,182,846	41.2	130.7
Kathmandu Valley	448,128	73.0	667,439	84.3	48.9
Municipality Type					
Gaunpalika	130,606	6.8	406,459	18.6	211.2
Municipalities	**1,088,454**	**31.0**	**2,108,634**	**47.1**	**27.3**
Municipality	566,630	21.8	1,370,632	40.7	141.9
Sub-Metropolitan City	132,186	40.1	255,170	56.3	93.0
Metropolitan City	389,638	66.5	482,832	73.5	23.9
DEGURBA Class					
Urban	786,484	57.7	1,353,535	69.8	72.1
Peri-urban	371,760	18.9	905,003	37.2	143.4
Rural	60,816	2.9	256,555	11.2	321.9
Nepal	**1,219,060**	**22.5**	**2,515,093**	**37.8**	**106.3**

Source: Population Census 2011-2021, NSO

❖ Rental housing

Rental housing is visibly becoming an urban phenomenon. Its proportion is small to modest in municipalities (12.8%) and sub-metropolitan cities (18.3%), yet significant in metropolitan cities at the rate of 42.6 percent. In comparison, Gaunpalikas show a negligible proportion at 2.6 percent. The proportion is significantly higher in Kathmandu Valley at 50.1 percent and quite significant in urban areas at 34.3 percent. In rural areas, at 3 percent, the rate is negligible.

The highest concentration of rental population is seen in Kathmandu Valley with 50.1 percent of the total households as rental population. Within the ecological regions, Inner Tarai holds the largest share with 10.8 percent. Within the DEGURBA classification, urban areas have the highest

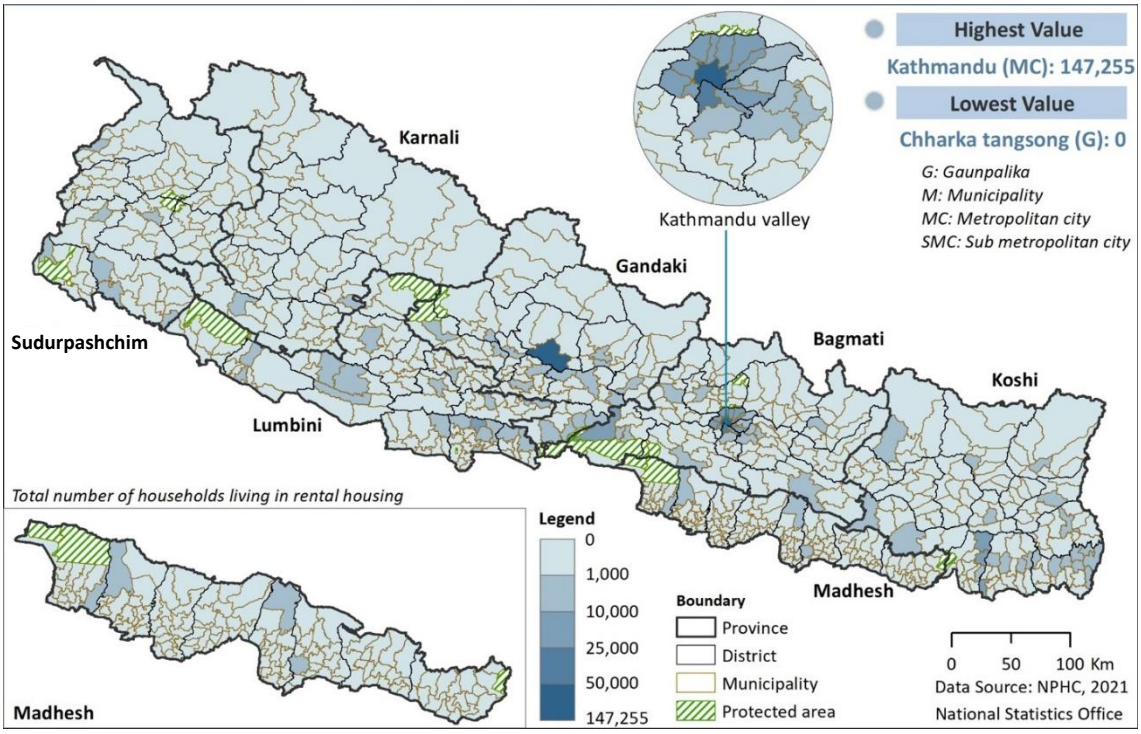
share of rental population at 34.3 percent of total households, strongly linking this pattern as an urban phenomenon.

Table 24: Households living in rental housing

Boundary	HHs 2011	Rental%	HHs 2021	Rental%	2011-2021 % change
Province					
Koshi	96,068	9.7	103,586	8.7	7.8
Madhesh	25,970	2.8	26,633	2.3	2.6
Bagmati	378,404	29.8	464,512	29.6	22.8
Gandaki	91,423	15.8	116,721	17.6	27.7
Lumbini	70,972	8.0	94,336	8.3	32.9
Karnali	13,696	4.6	19,393	5.3	41.6
Sudurpashchim	18,168	3.9	25,381	4.4	39.7
Municipality Type					
Gaunpalika	50,606	2.7	55,866	2.6	10.4
Municipalities	**644,095**	**18.3**	**794,696**	**17.8**	**27.3**
Municipality	294,620	11.3	431,551	12.8	46.5
Sub-Metropolitan City	65,599	19.9	82,857	18.3	26.3
Metropolitan City	283,876	48.4	280,288	42.6	-1.3
Ecological Belt					
Mountain	35,581	6.1	36,473	5.6	2.5
Hill	130,923	9.3	152,492	9.8	16.5
Inner Tarai	61,017	10.2	85,340	10.8	39.9
Tarai	144,581	6.5	180,133	6.3	24.6
Kathmandu Valley	322,599	52.6	396,124	50.1	22.8
DEGURBA class					
Urban	535,525	39.3	665,371	34.3	24.2
Peri-urban	90,137	4.6	116,864	4.8	29.7
Rural	69,039	3.3	68,327	3.0	-1.0
Nepal	**694,701**	**12.8**	**850,562**	**12.8**	**22.4**

Source: Population Census 2011-2021, NSO

Map 6: Households living in rental housing by Local Level in Nepal 2021



4.3.2 Connectivity and road networks

Local Road (LR) connects the Local Level centres with the ward centres and peripheral areas. This is a key indicator of urban-rural linkages. Nationwide, its stock is the largest, with density of 1.93 km of road per 1,000 population (or 3.78 km per 1,000 hectare). The District Core Road Network (DCRN) connects the district centres or Local Level centres or settlements with the strategic road (including national highways or provincial highways/feeder roads) or with other Local Level centres or settlements. The District Road is also indicator of inter-city or inter-settlements connectivity or arteries. Its density is 0.88 km of road per 1,000 people (1.73 km per 1,000 ha). The National Highway (NH) connects the national capital region with provincial capitals and connects one province with another. This is a key indicator of inter-province connectivity. Its density is 0.49 km per 1,000 people (0.97 km per 1,000 ha). This report uses road density to understand the accessibility condition of the location.

Nationally, the hierarchical ratio of roads comprising NH:DR:LR is 1:1.8:3.9. The ratio tends to give some indication of deficiency of district roads in the present national road stock. Overall, the hierarchy of roads gives broad insights into the mobility condition of the area.

At the provincial level, Koshi contains a greater highway density of 0.57 km per 1,000 people, exceeding the national average of 0.49 km. This indicates that a relatively larger number of

people in the province have access to highways than the national average (NA). Access to inter-city/municipality or inter-settlement connectivity (DRCN) is fair, with a density of 1.12 km per 1,000 population (national average of 0.88). However, Koshi has less access to LR. Its density of 1.7 km per 1,000 population (3.39 km per 1,000 ha) is lower than the national average of 1.93 (3.78 km 1,000 ha). This tends to indicate the prevalence of potentially lower urban-rural linkage in the province. This is also reflected in the hierarchical road ratio of 1:1.96:2.98 of the province.

The data also reveals that Madhesh has a lesser highway length of 0.17 km per 1,000 population (National Average, NA 0.49), although density in terms of area is 1.19 km per 1,000 ha (NA 0.97). National highway stock is relatively small in Madesh at 1,058 km (7.4% of total 14,289). Access to inter-city or inter-settlement connectivity is low - with a density of 0.27 km per 1,000 population (NA 0.88). This is despite higher density in terms of area, which is 1.82 km per 1,000 ha (NA 1.73). Access to local road connectivity is also limited to 1.52 km per 1,000 population (NA 1.93), despite a relatively higher local road density in terms of area at 10.44 km per 1,000 ha (NA 3.78). The hierarchical ratio of NH:DR:LR is 1:1.6:8.9.

The overall connectivity/accessibility condition may be deficient in Madhesh despite high aggregate road density of 13.45 km per 1,000 hectares. It appears that there is a higher population with lower connectivity, especially that connecting inter-city or inter settlement or strategic roads (1.59). This condition may be due to the fact that Madhesh has a high population density (6.87 ppHa, refer to Table 3), but a low urbanization level (20.71%, refer to Table 12) with scattered peri-urban (73.45%) and rural (5.84%) settings.

Gandaki and Bagmati have greater access to local connectivity - with density of 2.83 km per 1,000 persons (3.22 km per 1,000 ha) and 2.59 km per 1,000 persons (8.46 km per 1,000 ha) respectively - indicating a potentially higher degree of urban-rural linkage in these provinces. This is also reflected in their hierarchical road ratios of 1:2.7:4.6 and 1:2.1:7, respectively. Gandaki and Bagmati have relatively stronger hierarchical road ratio - indicating better overall accessibility condition.

In contrast, Lumbini, Sudurpashchim and Karnali tend to have lower access to local connectivity, with densities of 1.56, 1.81 and 1.73 km per 1,000 persons respectively (NA 1.93), indicating a lower degree of urban-rural linkages. Their hierarchical road ratios are 1:1.6:3.3; 1:1.4:2.4; and 1:1.28:1.31, respectively. These ratios indicate a relatively weak accessibility condition, which is especially visible in Karnali province – which shows relatively fewer district roads and local roads.

Metropolitan cities, with large population sizes and population density vying for the road, tend to show lower road density in all categories of roads, including local (1.41 km per 1,000 population against NA of 1.93), district (0.13 against NA of 0.88), and national highway (0.12 against NA of 0.49). Hierarchical road ratio at metropolitan area is 1:1.1:9.5, indicating potential

shortfall in the inter-city or inter-settlements connectivity or arteries. This is despite having a density in terms of area of 2.8 km per 1,000 ha which exceeds the overall municipal average of 2.2. Potential shortfall of inter-city or inter-settlements connectivity or arteries also tends to prevail in sub-metropolitan cities and municipalities, as revealed by the respective hierarchical road ratios of 1:1.1:6.2 and 1:1.4:4.4. In comparison, at the Gaunpalika level where hierarchical road ratio is 1:2.3:3, access to local road appears to be deficient.

In Kathmandu Valley, the hierarchical road ratio is 1:1.9:13.9, indicating potentiality of deficient condition of inter-city or intercity connectivity or arteries. This is despite the density of district road in terms of area being at 4.76 km per 1,000 ha. Similarly, the trend at national level also indicates a potentially deficient condition of such inter-city or intercity connectivity or arteries at urban and peri-urban areas also. The hierarchical road ratio at urban and peri-urban areas are 1:0.9:6.3 and 1:1.8:8, respectively.

Apart from variables such as road density and hierarchy, its quality also determines the overall performance of roads including accessibility and mobility of the area. 65.6 percent of wards (out of total 1,304) in the Mountain lacks black-topped roads, and 53 percent of wards (out of total 2,163) of the Hill lacks black-topped roads. This data tends to show that accessibility and mobility in the majority of the areas in the Mountain and Hill is contained due to inadequate quality of roads, broadly indicating their temporary or seasonal condition.

Table 25: Road stock (kilometres) and accessibility, 2021

Boundary	Road length in km and density in km/1000 population (2021)						Hierarchical ratio of roads NH:DR:LR
	NH (km)	NH/ 1000 pop	LR (km)	LR/ 1000 pop	DCRN (km)	DCRN /1000 pop	
Province							
Koshi	2,818	0.57	8,354	1.7	5,497	1.12	1:1.96:2.98
Madhesh	1,058	0.17	9,296	1.52	1,622	0.27	1:1.59:8.9
Bagmati	2,254	0.37	15,585	2.59	4,693	0.78	1:2.1:7
Gandaki	1,485	0.61	6,897	2.83	3,944	1.62	1:2.66:4.6
Lumbini	2,441	0.48	7,957	1.56	3,973	0.78	1:1.63:3.25
Karnali	2,208	1.32	2,905	1.73	2,839	1.69	1:1.28:1.31
Sudurpashchim	2,024	0.76	4,841	1.81	2,944	1.1	1:1.44:2.38
Ecological Belt							
Mountain	2,510	1.46	3,819	2.22	4,165	2.42	1:1.66:1.52
Hill	6,651	0.77	20,511	2.38	4,571	1.69	1:2.19:3.09
Inner Tarai	1,650	1.16	6,177	4.36	1,586	1.12	1:0.97:3.76
Tarai	3,244	0.23	22,023	1.55	4,745	0.33	1:1.43:6.74
Kathmandu Valley	234	0.08	3,305	1.11	444	0.15	1:1.88:13.9
Municipality Type							
Gaunpalika	6,946	0.71	21,276	2.16	15,788	1.61	1:2.27:3.04

Boundary	Road length in km and density in km/1000 population (2021)						Hierarchical ratio of roads NH:DR:LR
	NH (km)	NH/ 1000 pop	LR (km)	LR/ 1000 pop	DCRN (km)	DCRN /1000 pop	
Municipalities	**7,150**	**0.37**	**34,348**	**1.78**	**9,701**	**0.50**	**1:1.36:4.8**
Municipality	6,441	0.44	28,201	1.93	8,926	0.61	1:1.39:4.4
Sub-Metropolitan City	408	0.21	2,539	1.3	442	0.23	1:1.09:6.2
Metropolitan City	300	0.12	3,609	1.41	333	0.13	1:1.08:9.5
National Parks	**194**		**210**		**23**		
DEGURBA Class							
Urban	1,507	0.19	9,309	1.19	1,311	0.17	1:0.89:6.3
Peri-urban	2,546	0.22	20,273	1.76	4,458	0.39	1: 1.77: 8
Rural	10,236	1.07	26,252	2.73	19,743	2.06	1:1.93:2.55
Nepal	**14,289**	**0.49**	**55,834**	**1.93**	**25,512**	**0.88**	**1:1.79:3.9**

Source: Department of Roads (2021)

Within the ecological regions, the Hill has the highest road length, or 43.6 percent of the total road length, followed by the Tarai with 31.4 percent. While Inner Tarai has the highest density of the local road (4.36 km per 1,000 population), Kathmandu valley shows the lowest local road density.

By DEGURBA class, rural areas have the highest road length, or 58.8 percent of the total road length and the highest density in all class, with the highest of 2.73 kilometres of local roads per 1,000 population, which is followed by peri-urban region.

Table 26: Road network (kilometres) and density (kilometres/hectare), 2021

Geographic Area	Area (ha)	NH (km)	NH/1000 ha	LR (km)	LR/1000 ha	DCRN (km)	DCRN/ 1000 ha
Province							
Koshi	2,466,253	2,818	1.14	8,354	3.39	5,497	2.23
Madhesh	890,262	1,058	1.19	9,296	10.44	1,622	1.82
Bagmati	1,842,927	2,254	1.22	15,585	8.46	4,693	2.55
Gandaki	2,138,909	1,485	0.69	6,897	3.22	3,944	1.84
Lumbini	1,784,189	2,441	1.37	7,957	4.46	3,973	2.23
Karnali	2,525,255	2,208	0.87	2,905	1.15	2,839	1.12
Sudurpashchim	1,917,223	2,024	1.06	4,841	2.53	2,944	1.54
Ecological Belt							
Mountain	5,474,584	2,510	0.46	3,819	0.70	4,165	0.76
Hill	4,010,890	6,651	1.66	20,511	5.11	4,571	1.14
Inner Tarai	1,521,796	1,650	1.08	6,177	4.06	1,586	1.04
Tarai	2,464,394	3,244	1.32	22,023	8.94	4,745	1.93
Kathmandu Valley	93,355	234	2.50	3,305	35.40	444	4.76

Geographic Area	Area (ha)	NH (km)	NH/1000 ha	LR (km)	LR/1000 ha	DCRN (km)	DCRN/ 1000 ha
Municipality Type							
Gaunpalika	9,158,976	6,946	0.76	21,276	2.32	15,788	1.72
Municipalities	**4,406,041**	**7,150**	**1.62**	**34348**	**7.80**	**9701**	**2.20**
Metropolitan City	4,045,135	6,441	1.59	28,201	6.97	8,926	2.21
Sub-Metropolitan City	241,722	408	1.69	2,539	10.50	442	1.83
Municipality	119,185	300	2.52	3,609	30.28	333	2.80
National Parks	**1,199,110**	**194**	**0.16**	**210**	**0.17**	**23**	**0.02**
DEGURBA Class							
Urban	412,783	1,507	3.65	9,309	22.55	1,311	3.18
Peri-Urban	1,728,575	2,546	1.47	20,273	11.73	4,458	2.58
Rural	11,423,659	10,236	0.90	26,252	2.30	19,743	1.73
Nepal	**14,764,128**	**14,289**	**0.97**	**55,834**	**3.78**	**25,512**	**1.73**

4.3.3 Drinking water supply

Piped water supply is a critical indicator of development because it reflects a region's infrastructure quality, public health standards, and overall socio-economic progress. Moreover, piped water availability influences gender equality, education, and economic productivity.

Access to piped water supplies (including within or outside premises) has increased quite substantially at the national level during the period of 2011 and 2021, with a majority (57%) of households in 2021 having such access compared to just 47.8 percent in 2011. However, the significant rate of 43 percent of households lack access to piped water.

Of the seven provinces, just one fifth of the population of Madhesh (22.6%) has access to pipe water supply, a figure related to the province's overwhelming reliance on hand pumps. Overall, around one-third (31.3%) of households only have access to piped water in Tarai. The significant proportion of households in municipalities (47.3%), sub-metropolitan areas (39.4%), and metropolitan areas (42.4%) lack access to piped water. In urban areas, the proportion is 40 percent and tends to increase in peri-urban areas, where two-thirds of households (66.9%) lack pipe water access, despite 39 percent of the nation's population living in the peri-urban area. In the National Capital Region of the Kathmandu Valley, 43.9 percent of households lack piped water access and tend to rely on alternative sources such as water wells, waterspouts, and rivers. This data tends to indicate that piped water supply is lacking across urban areas, affecting women and children, and limiting their opportunities for education and income generation.

Within the ecological regions, the Hill has the highest coverage of piped water supply with 87 percent coverage, followed by the Mountain with 86.2 percent.

Table 27: Households' access to piped water supply, 2011-2021

Boundary	HHs 2011	% Piped	HHs 2021	% Piped	2011-2021 % change
Province					
Koshi	436,316	44.0	647,331	54.4	48.4
Madhesh	97,472	10.5	261,809	22.6	168.6
Bagmati	852,253	67.2	1,066,591	68.0	25.1
Gandaki	462,277	80.0	562,729	85.1	21.7
Lumbini	370,788	41.9	655,706	57.5	76.8
Karnali	182,981	61.4	293,084	80.1	60.2
Sudurpashchim	189,292	40.3	307,611	53.3	62.5
Ecological Belt					
Mountain	450,446	76.8	562,342	86.2	24.8
Hill	1,083,590	76.7	1,350,207	86.8	24.6
Inner Tarai	303,093	50.6	540,908	68.5	78.5
Tarai	355,830	16.1	897,447	31.3	152.2
Kathmandu Valley	398,420	64.9	443,957	56.1	11.4
Municipality Type					
Gaunpalika	1,000,757	52.5	1,367,472	62.6	36.6
Municipalities	**1,590,622**	**45.2**	**2,427,389**	**54.2**	**27.3**
Municipality	1,087,332	41.8	1,774,574	52.7	63.2
Sub-Metropolitan City	151,081	45.9	274,456	60.6	81.7
Metropolitan City	352,209	60.1	378,359	57.6	7.4
DEGURBA Class					
Urban	783,232	57.5	1,162,683	60.0	48.4
Peri-urban	418,946	21.3	804,155	33.1	91.9
Rural	1,389,201	66.2	1,828,023	79.8	31.6
Nepal	**2,591,379**	**47.8**	**3794861**	**57.0**	**46.4**

Source: Population Census 2011-2021, NSO

Based on the DWSS report of 2019, of the total 42,039 water supply schemes in Nepal to supply piped water, over 96.15 percent cater to a range of 50 or less households within respective communities; that is to say that less than one percent of water supply schemes serves 500 or more households.

Small scale and community-based water supply systems are predominant, particularly in Mountain and Hill, where the terrain is challenging. 40,006 (95%) of the total water supply schemes are in Hill (81.8%) and Mountain (13.2%). Of the total, 95 percent of water schemes use gravity flow which allows for efficient water supply systems seen mostly in the Hill and the Mountain. However, reliability, frequency and quality of piped water is to be strengthened.[20]

[20] https://dwssm.gov.np/content/71/the-condition-of-drinking-water-and-sanitation/

4.3.4 Access to electricity

Access to electricity - particularly grid-based electricity - is a fundamental indicator of development, reflecting a nation's industrialization, technological advancement, and quality of life. Reliable electricity enables modern healthcare, education, and communication systems, while also powering industries, businesses, and essential services. Furthermore, grid electricity enhances productivity, gender equality, and environmental sustainability. Access to electricity also reduces the time burden on women and children, who often collect fuel for lighting and cooking, allowing for greater educational and economic opportunities.

Households' access to electricity has improved significantly at the national level, from 67.3 percent in 2011 to 92.2 percent in 2021. This accounts for electricity sources such as the national grid, micro hydel, solar power, and wind turbines. Only Karnali Province shows low access at 49.6 percent, followed next by Sudurpashchim at 81.3 percent. With regard to the administrative areas, 94.6 percent of households in municipalities have access to electricity, with the percent share at 97.7 percent for sub-metropolitan cities and 99.4 percent at metropolitan cities. Gaunpalikas have only 85 percent of households with access to electricity.

However, when accounting for household access to national grid-based electricity, the above percentage share decreases. The significance of national grid-based electricity is important as it tends to be reliable and efficient, catering to domestic, business, and manufacturing power needs, with 24-hour supplies in comparison to other sources. The NEA data of 2019 shows that only 77.8 percent of households have access to national grid-based electricity at the national level. Of the seven provinces, Karnali and Sudurpashchim have limited access to national grid sourced electricity, with the rates of household access seen at 27 percent and 58.9 percent, respectively.

Within the DEGURBA classes, rural areas have electricity coverage less than the national average and at 81.2 percent, which is less than that of Gaunpalikas. Urban areas show the highest access to electricity at 98.2 percent.

Table 28: Households connected to electricity, 2011-2021

Boundary	HHs 2011	Electricity%	HHs 2021	Electricity%	2011-2021 % change
Province					
Koshi	652,770	65.8	1,115,686	93.7	70.9
Madhesh	556,342	59.7	1,132,078	97.9	103.5
Bagmati	1,087,058	85.7	1,526,035	97.3	40.4
Gandaki	476,841	82.5	645,780	97.6	35.4
Lumbini	583,931	66.0	1,069,081	93.7	83.1
Karnali	64,850	21.7	181,676	49.6	180.1
Sudurpashchim	225,954	48.1	468,805	81.3	107.5
Ecological Belt					
Mountain	317,126	54.0	554,917	85.0	75.0
Hill	815,307	57.7	1,305,432	83.9	60.1
Inner Tarai	391,537	65.4	702,061	89.0	79.3
Tarai	1,523,610	68.9	2,789,231	97.1	83.1
Kathmandu Valley	600,166	97.8	787,500	99.5	31.2
Municipality Type					
Gaunpalikas	934,292	49.0	1,859,005	85.0	99.0
Municipalities	**2,713,454**	**77.2**	**4,280,136**	**95.7**	**27.3**
Municipality	1,865,881	71.8	3,183,989	94.6	70.6
Sub-Metropolitan City	280,232	85.0	442,849	97.7	58.0
Metropolitan City	567,341	96.8	653,298	99.4	15.2
DEGURBA class					
Urban	1,241,496	91.1	1,903,726	98.2	53.3
Peri-urban	1,390,481	70.8	2,376,200	97.7	70.9
Rural	1,015,769	48.4	1,859,215	81.2	83.0
Nepal	**3,647,746**	**67.3**	**6,139,141**	**92.2**	**68.3**

Source: Population Census 2011-2021, NSO

Table 29: Access to national grid at the provincial level

Province	Households	Electrification (%)
Koshi	1,070,519	75.9
Madhesh	1,056,605	79.8
Bagmati	1,459,858	90.3
Gandaki	601,920	87.4
Lumbini	984,341	81.0
Karnali	339,197	27.0
Sudurpashchim	523,808	58.9
Nepal	**6,036,248**	**77.8**

Source: Nepal Electrification Statistics, 2019, Nepal Electricity Authority (NEA)

4.3.5 Education facilities

School Education Facilities (SEFs) consist of facilities for early childhood, basic, and secondary education. There are 36,558 schools nationally in Nepal. Of these, basic education accounts for 65 percent, secondary education accounts for 31 percent, and early childhood education accounts for 4 percent of the total.

The national density of school education facilities (SEF) is 1.3 SEFs per 1,000 population and 2.7 SEFs per 1,000 ha. Province wise, the density of SEFs in Madhesh is 0.8 SEFs per 1,000 population. This tends to indicate a greater population per SEF, thereby potentially entailing a greater number of students present in respective education facilities. Whereas in Karnali, the density stands at 2.0 SEFs per 1,000 population, indicating a lower population and therefore potentially fewer students per education facility.

Similarly, the SEF density in the metropolitan area is 0.7 per 1,000 population. This tends to indicate the incidence of a larger (student) population in education facilities. This demand/stress in education facility tends to gradually decline in lower administrative hierarchies such as Gaunpalikas, as revealed by the density of 1.7 SEF per 1,000 population.

The concentration of SEFs when accounted in terms of area is distinct in the municipalities and it increases significantly according to the increasing hierarchy of administrative boundaries. Compared to Gaunpalikas, which has a density of 1.8 SEF per 1,000 ha, the municipalities have a density is 4.0 SEF per 1,000 ha, while the density increases to 6.5 SEF per 1,000 ha in sub-metropolitan areas and 16.0 SEF per 1,000 ha in metropolitan areas. The higher density of SEFs in terms of area tends to indicate the prevalence of a greater number of education facilities, potentially meaning a higher degree of choices for education facilities.

By ecological region, Tarai has the lowest ratio of schools with only 0.9 facilities for 1,000 population. Likewise, the ratio is also lower than the national average in the Inner Tarai region, with 1.2 school facilities for 1,000 population. Conversely, the Mountain region has 2.2 school facilities for the same population.

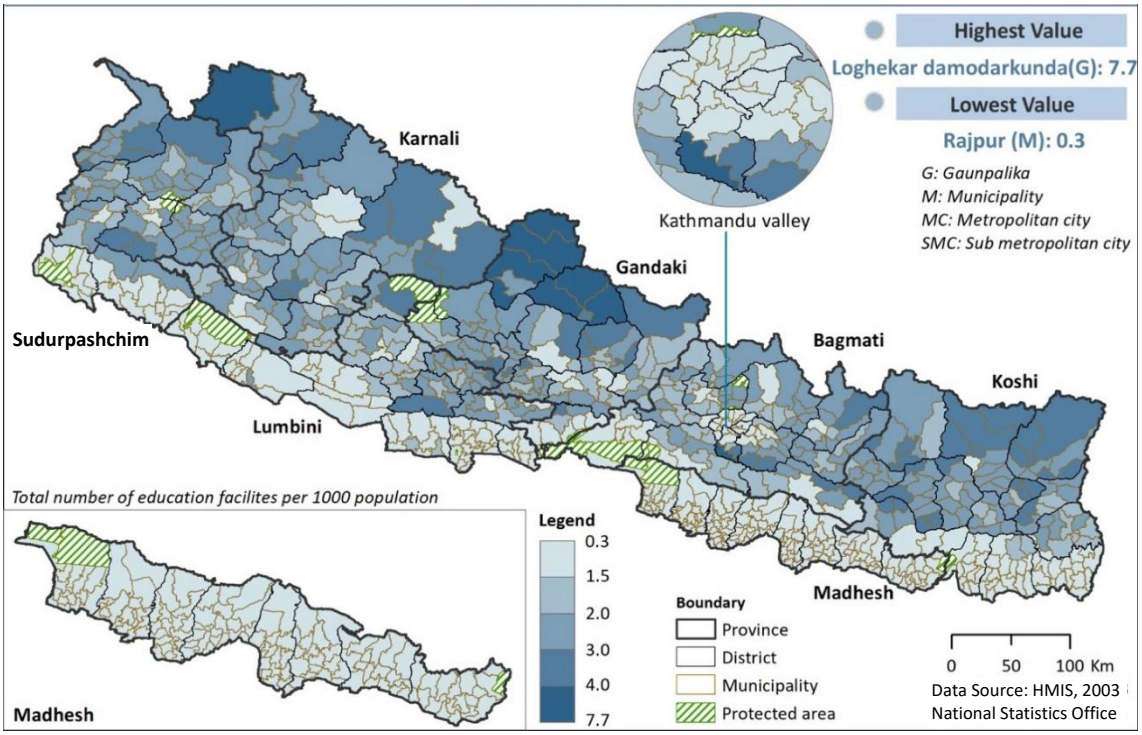
By DEGURBA classification, rural areas – which account for 33 percent of the total population – have the higher ratio of 2.1 school facilities for 1,000 population, and the highest number of early education and basic level schools. Relatively, peri-urban areas – mostly across Tarai and Inner Tarai – have a lower number of all categories of school facilities.

Table 30: School education facilities per 1,000 population

Boundary	Early childhood	Basic (1-8)	Secondary (9-12)	Total SEF	SEF/1000 pop	SEF/1000 ha
Province						
Koshi	139	4,743	2,093	6,975	1.4	2.8
Madhesh	37	3,413	1,244	4,694	0.8	5.3
Bagmati	361	3,671	2,994	7,026	1.2	3.8
Gandaki	172	2,628	1,335	4,135	1.7	1.9
Lumbini	314	3,937	1,773	6,024	1.2	3.4
Karnali	220	2,437	742	3,399	2.0	1.3
Sudurpashchim	199	2,971	1,135	4,305	1.6	2.3
Ecological Belt						
Mountain	311	4224	1428	5963	2.2	1.1
Hill	542	8835	3284	12661	2.0	3.2
Inner Tarai	71	2544	1272	3887	1.2	2.3
Tarai	324	7623	3791	11738	0.9	4.8
Kathmandu Valley	194	574	1541	2309	0.8	24.7
Municipality Type						
Gaunpalika	633	12,339	3,891	16,863	1.7	1.8
Municipalities	**809**	**11461**	**7425**	**19695**	**1.0**	**3.8**
Municipality	648	10,152	5,427	16,227	1.1	4.0
Sub-Metropolitan City	63	739	757	1,559	0.8	6.5
Metropolitan City	98	570	1,241	1,909	0.7	16.0
DEGURBA Class						
Urban	388	2689	3639	6716	0.9	15.9
Peri-urban	263	6460	3101	9824	0.9	4.97
Rural	791	14651	4576	20018	2.1	1.61
Nepal	**1,442**	**23,800**	**11,316**	**36,558**	**1.3**	**2.7**

Source: MOEST, 2024

Map 7: Education facilities by Local Level in Nepal 2023



4.3.6 Health facilities

Health facilities (HFs) consist of health posts (HP), primary health centres (PHC), and hospitals (H). A total of 7,068 HFs are recorded in Nepal. Of these, HPs consist of 53 percent, PHC as 32 percent, and hospitals as 15 percent. The national density is 0.24 HFs per 1,000 population (or 0.52 HFs per 1,000 ha/10 sq. km).

Among the provinces, Lumbini tends to have a higher population with access to a HF, with a density of 0.19 HFs per 1,000 population (against the national average of 0.24). Karnali has a lower population with access to HFs, with a density of 0.44 HFs per 1,000 population. All remaining five provinces show characteristics somewhat similar to these two highlighted provinces. Bagmati contains the greatest number of hospitals, with a share of about 30 percent of its total HFs. This is followed by Koshi, whose share is 15.2 percent. The share in Gandaki is 14.5 percent, Lumbini with 13.2 percent, Madhesh with 9.6 percent, and Sudurpashchim with 8.4 percent. Karnali has the lowest number of hospitals, accounting for only 6.95 percent of its total HFs. It is important to note that the concentration of hospitals is higher in the Tarai region, followed by the Kathmandu Valley.

The density of HFs tends to increase according to the administrative hierarchy. The density in Gaunpalikas are 0.34 HFs per 1,000 ha, with municipalities showing a rate of 0.80 HFs per 1,000

ha, and sub-metropolitan cities at a rate of 1.10 HFs per 1,000 ha. The density shows a sharp increase to 3.42 HFs per 1,000 ha in metropolitan cities.

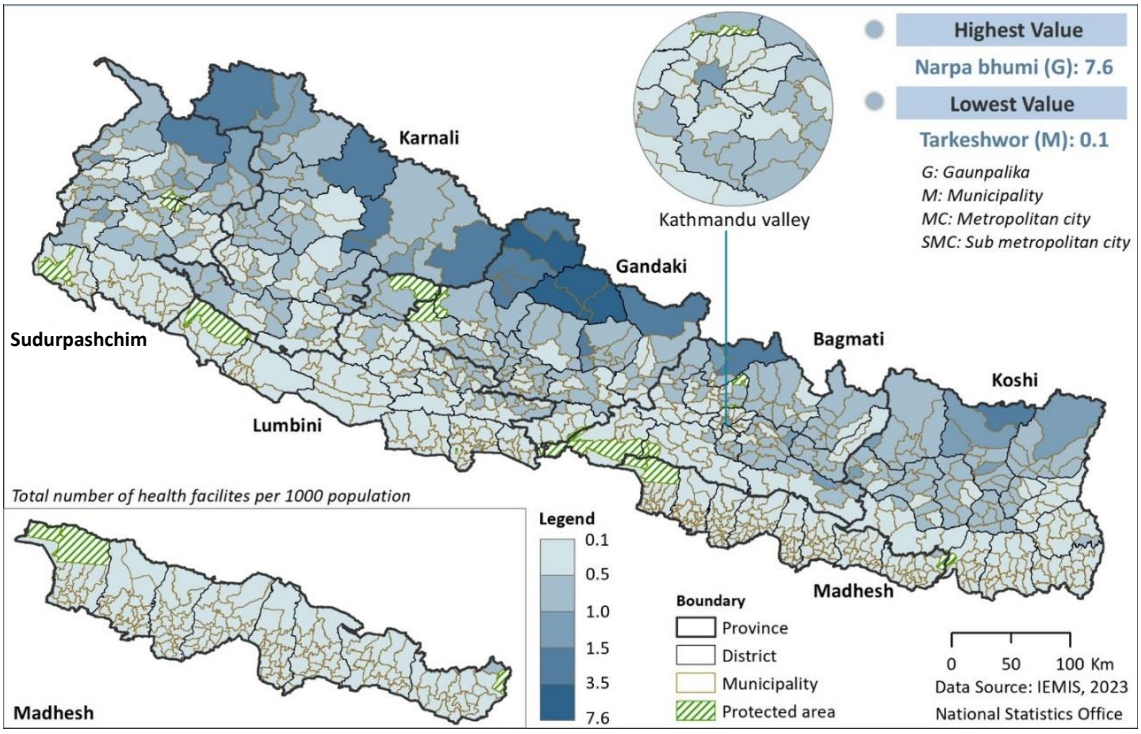
By DEGURBA class, rural areas have a higher ratio with 0.38 facilities for 1,000 population, while mostly consisting of a concentration of primary health centres and health posts. The urban areas have the highest concentration of hospitals, or 69.5 percent of all hospitals, whereas urban areas hold only 27 percent of the total national population.

Table 31: Health facilities/or number of beds per 1,000 population

Boundary	Health facilities (HF, 2021)					
	Health Post (HP)	Primary Health Centre (PHC)	Hospital (H)	Total HF	HF/1000 pop	HF/1000 ha
Province						
Koshi	625	432	189	1246	0.25	0.51
Madhesh	738	435	125	1298	0.21	1.46
Bagmati	625	273	380	1278	0.21	0.69
Gandaki	482	208	117	807	0.33	0.38
Lumbini	566	281	129	976	0.19	0.55
Karnali	329	354	51	734	0.44	0.29
Sudurpashchim	375	293	61	729	0.27	0.38
Ecological Belt						
Mountain	737	436	108	1,281	0.48	0.23
Hill	1,426	629	209	2,264	0.36	0.56
Inner Tarai	284	260	127	671	0.21	0.44
Tarai	1,178	915	375	2,468	0.18	1.00
Kathmandu Valley	115	36	233	384	0.13	4.11
Municipality Type						
Gaunpalika	2,108	895	135	3,138	0.32	0.34
Municipalities	**1,632**	**1,381**	**917**	**3,930**	**0.20**	**0.89**
Municipality	1,504	1,251	501	3,256	0.22	0.80
Sub-Metropolitan City	72	78	116	266	0.14	1.10
Metropolitan City	56	52	300	408	0.16	3.42
DEGURBA Class						
Urban	281	421	732	1,434	0.18	3.4
Peri-urban	1,098	745	174	2,017	0.18	1.02
Rural	2,361	1,110	146	3,617	0.38	0.29
Nepal	**3,740**	**2,276**	**1,052**	**7,068**	**0.24**	**0.52**

Source: MOHP, 2024

Map 8: Health facilities by Local Level in Nepal 2023



4.3.7 Absentee population living abroad

The absentee population living abroad refers to individuals who are considered residents of a country but are physically absent at the time of census enumeration, either residing and working in another country for the period of six months or more. These individuals are usual residents who are temporarily living abroad at the time of a census or survey, with the intention of returning. This category includes those who have left for foreign employment, education, or other purposes but excludes those who have permanently emigrated.

Three provinces – namely Gandaki, Sudurpashchim, and Lumbini – have more than one-quarter of households with at least one absentee in 2021. Gandaki has the highest at 31.4 percent, followed by Sudurpashchim (29.8%), and Lumbini (27%). Koshi (22.7%), Madhesh (21.8%), Bagmati (18.1%) and Karnali (17.1%) have less than one-quarter of households with at least one absentee. The distribution of provinces with households having at least one absentee is somewhat similar in 2011 data, with the exception of Lumbini which previously followed Gandaki with regard to hierarchy of absentee rates.

However, Madhesh Province shows the highest increase in the number of households with at least one absentee during the period between 2011 and 2021. The trend is consistent across ecological zones as the Tarai shows the largest decadal increase in number of households with

absentee during the same period. In Tarai, the number of households with absentees increased from 509,885 in 2011 to 674,888 in 2021, with an absolute change of 165,003.

By local level, municipalities (820,817, 52.8%) and Gaunpalikas (511,395, 32.9%) have the highest rate of households with absentees, with a majority at municipalities and households with absentees from the peri-urban areas show the highest decadal change. The figure increased from 486,566 in 2011 to 604,061in 2021 with an absolute change of 117,495.

Table 32: Households with at least one absentee

Boundary	2011			2021			% change (HHs with at least one absentee)
	Total HHs	HHs with at least one absentee	%	Total HHs	HHs with at least one absentee	%	
Province							
Koshi	991,750	274,517	27.7	1,190,755	269,892	22.7	-1.7
Madhesh	932,087	178,576	19.2	1,156,383	252,015	21.8	41.1
Bagmati	1,269,144	230,474	18.2	1,567,917	283,228	18.1	22.9
Gandaki	577,682	231,075	40.0	661,632	207,910	31.4	-10.0
Lumbini	884,757	285,487	32.3	1,141,345	308,073	27.0	7.9
Karnali	298,174	47,580	16.0	366,037	62,728	17.1	31.8
Sudurpashchim	469,703	130,969	27.9	576,772	172,115	29.8	31.4
Ecological Belt							
Mountain	586,810	130,420	22.2	652,721	117,500	18.0	-9.9
Hill	1,412,390	485,437	34.4	1,556,331	437,495	28.1	-9.9
Inner Tarai	598,540	158,862	26.5	789,093	187,537	23.8	18.1
Tarai	2,211,951	509,885	23.1	2,871,268	674,888	23.5	32.4
Kathmandu Valley	613,606	94,074	15.3	791,428	138,541	17.5	47.3
Municipality Type							
Gaunpalika	1,907,752	522,420	27.4	2,186,142	511,395	23.4	-2.1
Municipalities	**856,258**	**3,515,545**	**24.4**	**1,044,566**	**4,474,699**	**23.3**	**27.3**
Municipality	2,599,749	672,668	25.9	3,364,307	820,817	24.4	22.0
Sub-Metropolitan City	329,499	70,959	21.5	453,184	94,704	20.9	33.5
Metropolitan City	586,297	112,631	19.2	657,208	129,045	19.6	14.6
DEGURBA Class							
Urban	1,362,608	261,903	19.2	1,939,001	386,101	19.9	47.4
Peri-urban	1,963,214	486,566	24.8	2,432,079	604,061	24.8	24.1
Rural	2,097,475	630,209	30.0	2,289,761	565,799	24.7	-10.2
Nepal	**5,423,297**	**1,378,678**	**25.4**	**6,660,841**	**1,555,961**	**23.4**	**12.9**

Source: Population Censuses 2011-2021, NSO

Nepal has a significant national absentee population at 2.19 million as of 2021 data. Seeking employment (77.9%) is seen as the dominant reason for absence, either overseas or at selected urban centres within the country. Education and training account for 9.6 percent, and dependents account for 10.4 percent of absentee population. The trend indicates limited employment opportunities as well as educational amenities and qualities in the country.

Lumbini has the highest absentee population with around one-fifth (19.2%) of its population being absent. It is followed by Bagmati (18.2%), Sudurpashchim (15.7%), Koshi (15.7%), Madhesh (13.9%), Gandaki (13.1%), and Karnali (4.3%). When addressing the data by ecological region, Tarai (86.3%), Hill (83.6%), and Inner Tarai (83.2%) show a dominantly male absentee population. Kathmandu Valley has the lowest male absentee population at 64.2 percent, yet the female absentee population is significant at 35.8 percent.

Table 33: Households with at least one absentee by reason of absence

Boundary	Salary/ wage/self	Study/ training	Seeking job	Dependent	Others	Total
Province						
Koshi	76.5	7.0	8.7	6.3	1.5	100
Madhesh	77.8	3.9	12.3	4.6	1.5	100
Bagmati	53.5	27.6	7.2	9.5	2.2	100
Gandaki	68.5	10.1	8.1	10.4	2.9	100
Lumbini	70.8	5.2	11.7	10.1	2.2	100
Karnali	54.1	2.4	28.3	12.1	3.2	100
Sudurpashchim	60.0	3.1	13.8	20.4	2.7	100
Ecological Belt						
Mountain	62.0	7.7	14.9	12.9	2.5	100
Hill	68.0	6.0	11.5	11.9	2.5	100
Inner Tarai	65.9	10.5	13.0	8.6	2.0	100
Tarai	72.8	5.6	10.8	9.0	1.8	100
Kathmandu Valley	41.7	38.8	5.1	11.5	2.9	100
Municipality Type						
Gaunpalika	70.1	4.2	13.4	10.2	2.2	100
Municipalities	**47.4**	**31.0**	**5.5**	**13.0**	**3.2**	**100**
Municipality	68.0	9.2	10.6	10.2	2.0	100
Sub-Metropolitan City	67.6	10.7	10.2	9.2	2.3	100
Metropolitan City	47.4	31.0	5.5	13.0	3.2	100
DEGURBA Class						
Urban	56.0	22.7	7.6	11.1	2.6	100
Peri-urban	72.9	6.1	10.9	8.3	1.8	100
Rural	68.1	4.2	13.5	11.9	2.3	100
Nepal	**66.8**	**9.6**	**11.1**	**10.4**	**2.2**	**100**

Source: Population Censuses 2011-2021, NSO

With specific regard to sex, males are the dominant absentee population regardless of province, ecological region, administrative units, and degree of urbanization. The female absentee population is conspicuous in Kathmandu Valley and in metropolitan cities. Madhesh Province has the highest proportion of the absentee male population at 96 percent, whereas the lowest is seen in Bagmati Province at the rate of 70.4 percent.

Table 34: Distribution of absent population by sex

Boundary	Male	Male%	Female	Female%	Total	Distribution
Province						
Koshi	286,631	83.6	56,403	16.4	343,034	15.7
Madhesh	292,427	96.1	11,859	3.9	304,286	13.9
Bagmati	280,120	70.4	117,810	29.6	397,930	18.2
Gandaki	239,788	83.7	46,805	16.3	286,593	13.1
Lumbini	367,670	87.4	53,236	12.6	420,906	19.2
Karnali	77,278	81.9	17,042	18.1	94,320	4.3
Sudurpashchim	255,761	74.5	87,762	25.5	343,523	15.7
Ecological Belt						
Mountain	136,695	75.1	45,223	24.9	181,918	8.3
Hill	529,411	83.6	103,894	16.4	633,305	28.9
Inner Tarai	207,223	83.2	41,769	16.8	248,992	11.4
Tarai	794,136	86.3	126,444	13.7	920,580	42.0
Kathmandu Valley	132,210	64.2	73,587	35.8	205,797	9.4
Municipality Type						
Gaunpalika	612,695	84.9	109,380	15.1	722,075	33.0
Municipalities	**1,186,980**	**80.8**	**281,537**	**19.2**	**1,468,517**	**67.0**
Municipality	947,746	82.6	199,521	17.4	1,147,267	52.4
Sub-Metropolitan City	104,228	82.2	22,522	17.8	126,750	5.8
Metropolitan City	135,006	69.4	59,494	30.6	194,500	8.9
DEGURBA Class						
Urban	412,321	74.6	140,488	25.4	552,809	25.2
Peri-Urban	699,440	87.1	103,633	12.9	803,073	36.7
Rural	687,914	82.4	146,796	17.6	834,710	38.1
Nepal	**1,799,675**	**82.2**	**390,917**	**17.8**	**2,190,592**	**100**

Source: Population Census 2021, NSO

The absentee population dominantly (75.8%) falls within the young age group of 15-34, followed by adults in the range of 35-64 years (14.9%). Importantly, the absence of a large youth population may further be an indicator of the declining state of the national labour force. The trend is conspicuous by province, except for in Sudurpashchim and Karnali where children in the

age cohort of 0-14 years also show a significant rate of absence, or at 18.2 percent and 11.5 percent, respectively.

Table 35: Percentage distribution of absent population by age group (years)

Boundary	0-14	15-34	35-64	65+	Not stated	Total
Province						
Koshi	3.9	78.7	16.4	0.2	0.8	100
Madhesh	2.5	75.6	20.9	0.1	0.8	100
Bagmati	5.6	81.4	11.9	0.2	0.9	100
Gandaki	5.2	80.4	11.1	0.3	3.0	100
Lumbini	8.2	74.9	15.0	0.2	1.8	100
Karnali	11.5	68.9	17.3	0.3	1.9	100
Sudurpashchim	18.2	66.1	14.0	0.3	1.4	100
Ecological Belt						
Mountain	10.6	74.9	12.2	0.3	2.0	100
Hill	9.2	76.2	12.3	0.3	2.1	100
Inner Tarai	5.7	78.6	14.0	0.2	1.5	100
Tarai	6.6	74.0	18.1	0.2	1.1	100
Kathmandu Valley	6.5	80.3	12.1	0.3	0.8	100
Municipality Type						
Gaunpalika	8.4	74.8	15.0	0.2	1.6	100
Municipalities	**7.2**	**76.3**	**14.9**	**0.2**	**1.4**	**100**
Municipality	7.3	75.8	15.3	0.2	1.3	100
Sub-Metropolitan City	5.8	76.6	15.9	0.2	1.5	100
Metropolitan City	6.9	79.1	11.8	0.3	1.8	100
DEGURBA Class						
Urban	6.6	78.0	13.8	0.3	1.4	100
Peri-urban	5.7	75.3	17.7	0.2	1.2	100
Rural	10.0	75.0	13.0	0.2	1.7	100
Nepal	**7.6**	**75.8**	**14.9**	**0.2**	**1.5**	**100**

Source: Population Census 2021, NSO

Indigenous and Dalit groups are the main caste/ethnic groups among the absentee population, although their proportions are slightly lower in Madhesh, Sudurpashchim, and Karnali provinces. In Koshi, the Hill and Tarai zone Indigenous groups combine to a total of 53.4 percent, whereas Hill and Tarai Dalits combine to a total of 8.5 percent of the respective region's absentee populations. In Bagmati, Indigenous groups combine to 52.9 percent of the province's absentee population, whereas Dalits combine 4.4 percent. Gandaki's Indigenous groups combine to 44.7 percent and Dalits combine to 17.0 percent. Indigenous groups in Lumbini account for the

combined rate of 30.5 percent and Dalits to 19.1 percent, while religious and linguistic groups account for 4.7 percent. In Madhesh, the Madhesh/Tarai caste accounts for 44.8 percent among the absentee population, with religious and linguistic groups accounting for 18.8 percent, followed by Indigenous groups combining for 14.8 percent, and Dalits at the combined rate of 17.3 percent. In Sudurpashchim, Hill castes constitute 57.2 percent of the province's absentee population, Indigenous groups for the combined rate of 7.7 percent, and Dalits for 33.8 percent when also combined. In Karnali, the Hill castes represent 50.8 percent, Indigenous groups for 13.7 percent, and Dalits for 35.1 percent of absentee population when the respective groupings are combined.

Table 36: Percentage distribution of absent population by caste/ethnicity

Boundary	Hill Castes	Madhesh/ Tarai Caste	Mountain/ Hill *Janajatis*	Tarai *Janajatis*	Hill *Dalits*	Madhesh/ Tarai *Dalits*	Religious/ Linguistic groups	Other
Province								
Koshi	30.4	3.6	44.3	9.1	6.8	1.7	3.9	0.2
Madhesh	3.7	44.8	6.0	8.8	0.9	16.4	18.8	0.6
Bagmati	41.3	1.0	51.2	1.7	4.4	0.0	0.2	0.2
Gandaki	37.3	0.3	43.4	1.3	17.0	0.0	0.6	0.1
Lumbini	38.6	7.0	25.0	5.5	17.2	1.9	4.7	0.1
Karnali	50.8	0.2	13.6	0.1	35.1	0.0	0.1	0.0
Sudurpashchim	57.2	1.3	2.3	5.4	33.8	0.0	0.0	0.0
Ecological Belt								
Mountain	40.7	0.1	40.4	0.1	18.4	0.0	0.2	0.1
Hill	41.9	0.2	35.2	0.1	22.3	0.0	0.2	0.0
Inner Tarai	42.8	1.1	34.8	6.6	14.2	0.1	0.3	0.1
Tarai	27.7	19.7	14.9	10.0	10.7	6.9	9.7	0.3
Kathmandu Valley	45.2	1.4	50.2	0.5	2.1	0.1	0.3	0.3
Municipality Type								
Gaunpalika	32.1	8.7	29.7	4.5	17.2	2.9	4.7	0.2
Municipalities	**38.3**	**8.5**	**27.9**	**5.3**	**12.9**	**2.9**	**4.0**	**0.2**
Municipality	37.6	9.6	24.7	5.8	14.3	3.5	4.5	0.2
Sub-Metropolitan City	37.5	7.5	31.7	6.9	10.3	2.0	3.9	0.2
Metropolitan City	42.9	2.9	44.4	1.3	6.3	0.2	1.5	0.3
DEGURBA Class								
Urban	41.8	5.6	37.2	2.0	8.0	1.2	4.0	0.2
Peri-urban	28.7	18.7	16.3	10.3	10.4	6.9	8.4	0.3
Rural	39.8	0.8	34.5	1.9	22.3	0.2	0.4	0.0
Total	**36.2**	**8.6**	**28.5**	**5.0**	**14.3**	**2.9**	**4.2**	**0.2**

Source: Population Census 2021, NSO

4.4 Household entitlements

Urbanization in Nepal has significantly transformed household entitlements, reshaping access to resources, livelihoods, and economic opportunities. Under household ownership, rapid urban growth has altered property dynamics, with rising land and housing prices affecting affordability and tenure security. The occupational structure reflects a shift from agriculture to service and informal sectors, as urban households increasingly engage in trade, construction, and wage labour. Meanwhile, the employment structure reveals disparities, with formal jobs concentrated among skilled workers while many rely on unstable informal work. The status of employment in economic activity further highlights vulnerabilities, as urban households face underemployment, low wages, and precarious working conditions, particularly in the informal economy. These factors collectively shape household resilience in Nepal's rapidly urbanizing landscape, influencing poverty, inequality, and social mobility.

4.4.1 Household ownership

The household ownership rate of housing units is 86 percent nationally. Province wise, the housing ownership rate in Bagmati (69.2%) and Gandaki (80.5%) provinces is lower than the national average. This potentially indicates maturing or matured urbanization state of the Kathmandu Valley in Bagmati and the Pokhara Valley in Gandaki, where a significant proportion of households rely on rental housing. All other provinces show housing ownership rates which exceed the national average.

By ecological region, Inner Tarai has the lowest share of households with ownership of housing units at the rate of 88 percent. Housing ownership is significantly lower in urban areas (64.1%). This continues to decline in metropolitan areas (55.4%), and housing ownership is the lowest in the Kathmandu Valley with an ownership rate of 48.5 percent, which also correlates with the higher proportion of rental population which is 50.1 percent in the valley.

Table 37: Household's ownership of housing units

Boundary	2011			2021			% change (No. of HHs with ownership of housing units)
	Total HHs	No. of HHs with ownership of housing units	%	Total HHs	No. of HHs with ownership of housing units	%	
Province							
Koshi	991,750	865,693	87.3	1,190,755	1,067,240	89.6	23.3
Madhesh	932,087	896,369	96.2	1,156,383	1,117,188	96.6	24.6
Bagmati	1,269,144	860,603	67.8	1,567,917	1,084,672	69.2	26.0
Gandaki	577,682	472,211	81.7	661,632	532,518	80.5	12.8
Lumbini	884,757	802,408	90.7	1,141,345	1,036,311	90.8	29.2

Boundary	2011			2021			% change (No. of HHs with ownership of housing units)
	Total HHs	No. of HHs with ownership of housing units	%	Total HHs	No. of HHs with ownership of housing units	%	
Karnali	298,174	281,352	94.4	366,037	344,079	94.0	22.3
Sudurpashchim	469,703	445,017	94.7	576,772	546,578	94.8	22.8
Ecological Belt							
Mountain	586,810	539,715	92.0	652,721	609,954	93.4	13.0
Hill	1,412,390	1,254,830	88.8	1,556,331	1,384,861	89.0	10.4
Inner Tarai	598,540	519,221	86.7	789,093	694,553	88.0	33.8
Tarai	2,211,951	2,030,652	91.8	2,871,268	2,655,123	92.5	30.8
Kathmandu Valley	613,606	279,235	45.5	791,428	384,095	48.5	37.6
Municipality Type							
Gaunpalika	1,907,752	1,828,053	95.8	2,186,142	2,109,823	96.5	15.4
Municipalities	**2,599,749**	**2,255,937**	**86.8**	**3,364,307**	**2,891,731**	**86.0**	**28.2**
Municipality	2,599,749	2,255,937	86.8	3,364,307	2,891,731	86.0	28.2
Sub-Metropolitan City	329,499	253,920	77.1	453,184	363,085	80.1	43.0
Metropolitan City	586,297	285,743	48.7	657,208	363,947	55.4	27.4
DEGURBA Class							
Urban	1,362,608	793,075	58.2	1,939,001	1,242,868	64.1	56.7
Peri-urban	1,963,214	1,839,182	93.7	2,432,079	2,285,490	94.0	24.3
Rural	2,097,475	1,991,396	94.9	2,289,761	2,200,228	96.1	10.5
Nepal	**5,423,297**	**4,623,653**	**85.3**	**6,660,841**	**5,728,586**	**86.0**	**23.9**

Source: Population Censuses 2011-2021, NSO

With regard to household entitlements, internet ownership is regarded as an important asset for social and economic well-being of households, and its access is considered as a proxy indicator for the economic prosperity of the area. Nationally, household access to the internet is seen at an overall rate of 37.8 percent in 2021. By province, Bagmati, Gandaki, and Koshi have greater rates of household ownership of internet, exceeding the national average. The rate is seen at 55.2 percent in Bagmati, 47.9 percent in Gandaki, and 38.1 percent in Koshi. All other provinces show a rate of ownership lower than national average. The lowest is 20.3 percent in Karnali, while it is 21.4 percent in Madhesh, 25.2 percent in Sudurpashchim, and 36 percent in Lumbini.

Within ecological regions, Inner Tarai areas show the highest percentage of households with internet access at 40.96 percent. However, the Hill, Tarai and Mountain regions show rates of internet access at 32.9, 33.0 and 19.3 percent which are lower than the national average.

Urban areas have relatively high household ownership of internet at 63 percent, while in the peri-urban area, the ownership halves to 33.2 percent, and the ownership is seen at the low rate of 21.3 percent in rural areas. At 40 percent, internet ownership is significant at municipality level, and it grows sharply to 50.6 percent at the sub-metropolitan and 71.3 percent at the metropolitan area levels. Household internet ownership is seen highest in Kathmandu Valley with an ownership rate of 76.6 percent. The trend tends to indicate that internet ownership is becoming greater associated with urban areas.

Table 38: Household's access to internets

Boundary	2011			2021			% change (No. of HHs with internets)
	Total HHs	No. of HHs with internets	%	Total HHs	No. of HHs with internets	%	
Province							
Koshi	991,750	15,715	1.6	1,190,755	453,858	38.1	2788.1
Madhesh	932,087	4,548	0.5	1,156,383	248,016	21.4	5353.3
Bagmati	1,269,144	126,463	10.0	1,567,917	864,913	55.2	583.9
Gandaki	577,682	17,489	3.0	661,632	317,007	47.9	1712.6
Lumbini	884,757	11,882	1.3	1,141,345	411,035	36.0	3359.3
Karnali	298,174	1,306	0.4	366,037	74,234	20.3	5584.1
Sudurpashchim	469,703	3,343	0.7	576,772	145,447	25.2	4250.8
Ecological Belt							
Mountain	586,810	3,186	0.5	652,721	126,118	19.3	3858.5
Hill	1,412,390	22,247	1.6	1,556,331	511,845	32.9	2200.7
Inner Tarai	598,540	15,673	2.6	789,093	322,423	40.9	1957.2
Tarai	2,211,951	28,427	1.3	2,871,268	948,075	33.0	3235.1
Kathmandu Valley	613,606	111,213	18.1	791,428	606,049	76.6	444.9
Municipality Type							
Gaunpalika	1,907,752	5,474	0.3	2,186,142	469,521	21.5	8477.3
Municipalities	**175272**	**3515545**	**5.0**	**2044989**	**4474699**	**45.7**	**1066.8**
Municipality	2,599,749	65,888	2.5	3,364,307	1,347,010	40.0	1944.4
Sub-Metropolitan City	329,499	10,896	3.3	453,184	229,385	50.6	2005.2
Metropolitan City	586,297	98,488	16.8	657,208	468,594	71.3	375.8
DEGURBA Class							
Urban	1,362,608	151,132	11.1	1,939,001	1,220,691	63.0	707.7
Peri-urban	1,963,214	22,853	1.2	2,432,079	806,432	33.2	3428.8
Rural	2,097,475	6,761	0.3	2,289,761	487,387	21.3	7108.8
Nepal	**5,423,297**	**180,746**	**3.3**	**6,660,841**	**2,514,510**	**37.8**	**1291.2**

Source: Population Censuses 2011-2021, NSO

Small Scale Enterprises (SSEs) in Nepal refers to small, typically family-run businesses in sectors such as cottage industries, trade, transportation, services, and other non-agricultural activities. These enterprises are usually not registered with any government institution and operate

informally, and they are run largely by family members. SSEs play a crucial role in supplementing family income, and the goods or services they produce are intended for sale to others, distinguishing them from purely subsistence activities. SSEs may contribute to reducing un-employment conditions and poverty.

Nationally, household ownership of small-scale enterprises (SSEs) is 9.4 percent. Household ownership of SSEs in Madhesh (10.4%), Bagmati (9.8%), and Koshi (9.8%) are slightly higher than national average. All other provinces show lower ownership than national average.

The variation in the household's ownership of SSEs between urban and rural as well as by municipality and Gaunpalika is small. Ownership in urban areas is 10.5 percent, compared to 8.4 percent in rural areas while ownership in municipalities is 9.6 percent compared to 8.7 percent in Gaunpalikas. In sub-metropolitan and metropolitan areas, the ownership is 10 percent and 10.2 percent, respectively. In the Kathmandu Valley, it is seen at the rate of 11 percent. Overall, the household's reliance on SSEs tends to be limited across the provinces and local level.

Table 39: Households ownership of small-scale enterprises

Administrative boundary	Total HHs	No. of HHs with ownership of SSE	Percent
Province			
Koshi	1,190,755	116,479	9.8
Madhesh	1,156,383	119,920	10.4
Bagmati	1,567,917	153,522	9.8
Gandaki	661,632	59,371	9.0
Lumbini	1,141,345	95,616	8.4
Karnali	366,037	32,463	8.9
Sudurpashchim	576,772	50,516	8.8
Ecological Belt			
Mountain	652,721	65,997	10.1
Hill	1,556,331	118,383	7.6
Inner Tarai	789,093	69,990	8.9
Tarai	2,871,268	286,303	10.0
Kathmandu Valley	791,428	87,214	11.0
Municipality Type			
Gaunpalika	2,186,142	191,141	8.7
Municipalities	**4,474,699**	**436,746**	**9.8**
Municipality	3,364,307	324,096	9.6
Sub-Metropolitan City	453,184	45,434	10.0
Metropolitan City	657,208	67,216	10.2
DEGURBA Class			
Urban	1,939,001	202,811	10.5
Peri-urban	2,432,079	233,160	9.6
Rural	2,289,761	191,916	8.4
Nepal	**6,660,841**	**627,887**	**9.4**

Source: Population Census 2021, NSO

4.4.2 Occupational structure

The Economically Active Population (EAP) by occupational grouping during 2011 and 2021 tends to show structural changes occurring by occupation. Nationally, the percent share in the agricultural occupation declined from 60.9 percent in 2011 to 50.1 percent in 2021. Furthermore, in manufacturing, the percent share declined from 9.5 percent in 2011 to 8.3 percent in 2021. During the same period between 2011 and 2021, the occupational engagement showing the most significant increase is the service sector. The percent share of occupation in service sector increased from 26.2 percent in 2011 to 41.6 percent in 2021. Nationally, the service combined with manufacturing sectors share around half (49.9%) of all occupations in 2021. This is a significant increase from 35.7 percent in 2011.

By province, only Bagmati and Madhesh show a majority of non-agricultural occupations, which are mostly seen in the service sector. Bagmati (63.1%) shows the largest share of non-agriculture occupation with the service sector at 53 percent and manufacturing at 10.1 percent. Manufacturing also shows a significant decline in Bagmati, with its share dropping to 10.1 percent in 2021 from 14.3 percent in 2011. The share of non-agricultural occupations in Madhesh is seen at 57.8 percent, with the service sector occupying 49 percent and manufacturing occupying 9.8 percent. Madhesh shows a marginal increase in manufacturing occupations between the period of 2011 of 2021. All other remaining provinces – namely Karnali (69.8%), Sudurpashchim (65.2%), Koshi (54.5%), Lumbini (54.0%), and Gandaki (51.6%) – have a majority of their occupation share in agricultural sectors.

Occupational shifts to non-agricultural from agricultural fields is noticeable in the municipalities. The non-agricultural occupation – combining services and manufacturing – is at the rate of 52.5 percent for municipalities, 74.4 percent for sub-metropolitan cities, and 89.5 percent for metropolitan cities.

In urban areas, the share is 82.9 percent and 51.8 percent in peri-urban areas. There share is the highest in Kathmandu Valley, with a share of 92.6 percent. Within ecological regions, Tarai has the highest share of the population with 55.9 percent, followed by the Inner Tarai region at 46.9 percent. The Mountain region has the highest share of its population (71.3%).

Table 40: Economically active population by occupational grouping (%)

Boundary	2011			2021			2011-2021
	Agriculture	Manufacturing	Service	Agriculture	Manufacturing	Service	Change (non-agriculture)
Province							
Koshi	62.0	8.5	24.7	54.5	8.0	37.4	88.2
Madhesh	54.0	9.3	31.9	41.1	9.8	49.0	105.1
Bagmati	48.8	14.3	33.9	36.9	10.1	53.0	75.8
Gandaki	66.3	8.8	22.4	51.6	8.0	40.1	90.0
Lumbini	65.5	9.2	22.8	54.0	8.1	37.8	100.2
Karnali	76.3	5.1	16.7	69.8	4.0	26.1	93.0
Sudurpashchim	74.3	5.3	17.9	65.2	5.3	29.4	104.5
Ecological Belt							
Mountain	78.9	4.5	14.0	71.3	4.3	24.3	77.3
Hill	74.2	6.1	17.1	67.1	5.2	27.7	74.0
Inner Tarai	64.6	10.0	23.1	53.0	9.4	37.5	99.5
Tarai	55.2	10.2	30.3	44.1	9.7	46.2	107.0
Kathmandu Valley	15.3	23.5	57.1	7.4	12.5	80.1	69.2
Municipality Type							
Gaunpalika	74.5	5.7	16.8	66.6	5.7	27.6	84.4
Municipalities	51.8	12.1	32.5	40.7	9.7	49.5	93.0
Municipality	59.4	9.9	27.1	47.4	8.8	43.7	105.4
Sub-Metropolitan City	38.9	17.7	39.3	25.5	14.0	60.4	107.4
Metropolitan City	15.6	21.3	59.2	10.4	12.1	77.4	53.4
DEGURBA Class							
Urban	24.6	19.7	51.6	17.0	12.5	70.4	99.1
Peri-urban	59.0	9.7	27.5	48.1	9.3	42.5	95.4
Rural	78.6	4.9	13.9	73.2	4.5	22.2	69.4
Nepal	**60.9**	**9.5**	**26.2**	**50.1**	**8.3**	**41.6**	**90.9**

Source: Population Censuses 2011-2021, NSO

4.4.3 Employment structure

❖ **Industrial sector**

Nationally, the economically active population (EAP) by industrial sector shows a gradual increase of tertiary and secondary sectors between the period of 2011 and 2021. Tertiary and secondary sectors combined increased to 42.4 percent in 2021 from 31.7 percent in 2011. The majority of the EAP nationally is still engaged in the primary industrial sector, with a share of

57.5 percent in 2021. This indicates that mining and quarrying and forestry are significantly adding to agriculture in the primary sector and creating employment. When addressing the data by province, a majority of the EAP is seen in the non-primary sector (57.5%) only in Bagmati, followed by 44.7 percent in tertiary and 12.8 percent in the secondary sectors.

Emerging shifts of the EAP from the primary sector to the secondary and tertiary sectors is also visible. The secondary and tertiary sectors increased from 8.6 to 12.7 percent and 23.4 to 31.8 percent respectively, while the primary sector declined from 64.2 to 55.5 percent during this period. Sub-metropolitan cities and metropolitan cities show an overwhelming to dominant share of the EAP in the secondary and tertiary sectors, combined at 66.6 percent and 82.1 percent.

The share of the EAP in the secondary and tertiary sectors combined is the highest in Kathmandu Valley at 86.2 percent, potentially reflecting its matured economic primacy in the country. By ecological regions, the primary sector remains pre-dominant, with the highest share in Mountain (75.3% of its total population) and with declining engagement in this sector across regions seen between 2011 and 2021. Engagement in the tertiary sector is higher in Tarai (30.3%) and Inner Tarai (29.0%), yet still lower than national average.

Table 41: Economically active population by industrial sector[21] (%)

Boundary	2011			2021			2011-2021
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	Change in non-primary
Province							
Koshi	63.7	7.8	23.3	62.9	11.0	26.1	63.7
Madhesh	64.9	8.5	20.9	54.2	15.5	30.3	123.8
Bagmati	50.7	11.7	34.3	42.4	12.8	44.7	67.8
Gandaki	68.7	7.6	21.2	57.8	10.2	31.7	79.5
Lumbini	69.4	8.1	19.7	60.4	12.7	26.7	98.0
Karnali	77.5	5.1	15.4	73.9	6.7	19.4	78.2
Sudurpashchim	76.4	5.1	16.0	70.2	8.9	20.9	93.5
Ecological Belt							
Mountain	79.6	4.3	13.5	75.3	5.7	18.9	58.9
Hill	74.1	5.5	17.7	71.5	6.9	21.5	50.0
Inner Tarai	67.5	8.4	21.7	58.9	12.0	29.0	91.5
Tarai	63.2	9.2	22.7	54.6	15.0	30.3	113.6

[21] Industrial sector: primary (agriculture, forestry, fishing; mining and quarrying), secondary (manufacturing, construction), tertiary (electricity gas, water supply sewerage, wholesale retail, transportation and storage, accommodation and food, information and communication, finance and insurance, real estate, public administration, education, health, arts entertainment, all other service activities)

Boundary	2011			2021			2011-2021
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	Change in non-primary
Kathmandu Valley	16.6	19.3	59.4	13.8	17.3	68.9	61.4
Municipality Type							
Gaunpalika	77.3	5.5	14.0	73.0	8.6	18.3	72.1
Municipalities	56.1	10.3	29.5	48.7	13.8	37.5	86.7
Municipality	64.2	8.6	23.4	55.5	12.7	31.8	101.4
Sub-Metropolitan City	42.5	14.8	37.8	33.3	19.1	47.5	101.2
Metropolitan City	17.5	17.9	60.2	17.8	16.7	65.4	45.3
DEGURBA class							
Urban	26.7	16.5	51.9	24.3	17.3	58.4	89.1
Peri-urban	67.0	8.6	20.0	58.7	14.1	27.1	101.9
Rural	79.3	4.6	13.4	77.5	6.3	16.1	48.2
Nepal	**64.6**	**8.4**	**23.3**	**57.5**	**11.9**	**30.5**	**83.1**

Source: Population Censuses 2011-2021, NSO

❖ Institutional, government and non-government/private sectors

The institutional sector of major economic activity categorizes employment based on the type of organization and its economic role. The government sector includes public administration, defence, and state-run services, providing stable employment with formal benefits. Financial corporations (banks, insurance companies, investment firms) and non-financial corporations (manufacturing, retail, technological) form the private sector, driven by profit and market competition, offering diverse employment conditions. Non-profit institutions serving households (NPISHs), such as charities and NGOs, focus on social welfare, often relying on grants and volunteers. The household sector covers domestic work and informal labour, frequently lacking legal protections. Each sector reflects distinct employment structures, from highly regulated (government, corporations) to informal (household work), shaping job security, wages, and labour rights. The 'financial corporation', 'non-financial corporation', and 'non-profit institution serving household' institutional sectors of employment are lumped into the 'non-government' sector for this analysis.

Nationally, the EAP by institutional sector is pronounced at household level at a rate of 61.8 percent. This may indicate prevalence of a large proportion of family-managed unorganized or unstructured nature of businesses and may also include informal nature of businesses. The share of the EAP in the non-government sector is 34.2 percent, indicating a significant share of institutions such as bank and finance, non-finance corporations, and other formal private entities. The share of government is small at a rate of just 3.9 percent.

Among provinces, Karnali has the highest EAP who are engaged at household level at 76.9 percent. It is followed by Sudurpashchim at 73.9 percent. Both of these provinces have a low level of populations employed in non-government institutions at 18.3 percent and 22.0 percent, respectively. However, both of these provinces have slightly higher levels of government institutions at 4.7 percent and 4.1 percent respectively, higher also than the national average of 3.9 percent. Bagmati shows the highest non-government institutional sector at 48.6 percent, with its representation in the government institutional sector at 5.1 percent, while the household institutional sector is at 46.3 percent.

The data clearly shows that representation of non-government institutional sector employment increases with the degree of development maturity. Metropolitan cities show a larger share of non-government institutional sector engagement at the rate of 70.9 percent. The data also shows increasing government sector engagement of 6.0 percent at the metropolitan level. At the sub-metropolitan city level, the non-government institutional sector's percentage share is 54.3 percent, while the government sector is 5.2 percent. The data indicates that, with increasing non-government institutional sector engagement, the rate of engagement within the government institutional sector also increases.

Household level institutional sector is very pronounced at the municipality and Gaunpalika level, with a large share of 60.4 percent and 75.9 percent, respectively. Conversely, the non-government sector is less pronounced in municipalities and Gaunpalikas. Their percentage share is 35.5 percent and 21 percent, respectively.

Thus, the prevalence of non-government institutional sector engagement (including formal private entities) and potential creation of employment opportunities are likely to grow along with the increasing administrative hierarchy of local level or the size of urban areas and cities.

In urban areas, the share of the non-government institutional sector is 62.8 percent. It is highest seen in the Kathmandu Valley with a share of 74.8 percent.

Table 42: Economically active population by institutional sector (%)

Boundary	Government	Non-Government	Household
Province			
Koshi	3.4	28.8	67.8
Madhesh	2.6	38.0	59.3
Bagmati	5.1	48.6	46.3
Gandaki	4.7	33.9	60.9
Lumbini	3.5	31.1	65.2
Karnali	4.7	18.3	76.9
Sudurpashchim	4.1	22.0	73.9
Ecological Belt			
Mountain	4.5	18.5	76.9

Boundary	Government	Non-Government	Household
Hill	4.3	21.8	73.7
Inner Tarai	4.0	32.6	63.2
Tarai	3.0	36.4	60.5
Kathmandu Valley	6.2	74.8	18.9
Municipality Type			
Gaunpalika	3.0	21.0	75.9
Municipalities	**4.4**	**41.7**	**53.8**
Municipality	4.1	35.5	60.4
Sub-Metropolitan City	5.2	54.3	40.4
Metropolitan City	6.0	70.9	22.9
DEGURBA Class			
Urban	6.6	62.8	30.6
Peri-urban	2.8	33.0	64.1
Rural	3.3	17.1	79.5
Nepal	**3.9**	**34.2**	**61.8**

Source: Population Census 2021, NSO

4.4.4 Status of employment in economic activity

The status of employment categorizes workers based on their role in economic activity. An employee works under a formal or informal contract for an employer (government, corporation, or individual), receiving wages or salaries in exchange for labour. An employer owns and operates a business, hiring others to work for them and assuming financial risks. An own-account worker (self-employed) operates a business or engages in independent work without hired employees, bearing full responsibility for profits and losses. A contributing family member (unpaid family worker) assists in a family-run enterprise without regular wages, common in agriculture or small household businesses. These classifications reflect varying levels of autonomy, income stability, and labour market formality, influencing economic vulnerability and social protections. The status of employment categories 'own account worker' and 'contributing family member' are lumped into 'self-employed' for the purposes of this analysis.

Nationally, the EAP by employment status shows that the majority of the population is mostly self-employed, at the rate of 69.9 percent in 2021. The trend of self-employment shows to have increased during the period between 2011 and 2021, with the rate of 67.8 percent seen in 2011. This may indicate the creation of fewer employment opportunities during this period. The finding is also supported through the percentage share of employers declining from 2.2 percent in 2011 to 1.4 percent in 2021, although the share of employee status has grown from 25.6 percent to 28.6 percent.

The shift in employment categories from employer to employee and self-employed suggests several important trends regarding job security and vulnerability. Overall, the main implication is increased precarity due to the large shift to self-employment, leading to a more informal and less secure workforce. This has resulted in fewer stable employers and fewer hiring opportunities, potentially weakening job creation and pushing individuals into unstable work. This trend raises policy concerns, as high self-employment may signal a lack of good formal jobs, highlighting the need for better labour protections or support for small businesses.

Self-employment is dominant in Karnali and Sudurpashchim provinces, with percentage shares at 83.8 percent and 80 percent respectively, while it is seen the lowest in Bagmati Province with a share of only 61.8 percent. Madhesh Province has a share of 63.2 percent. Lumbini, Gandaki, and Koshi provinces have a share of 72.7, 72.0, and 71.6 percent, respectively.

The data shows that sub-metropolitan cities and metropolitan cities are the potential generator of formal employment opportunities (indicated by employee and employer status), as well as market opportunities for self-employment (indicated by self-employed status). However, these also appear to be insufficient in creating adequate formal employment opportunities as nearly a majority are still self-employed. Metropolitan cities have 50.7 percent reporting their status as an employee, with 3.5 percent as employers, and 45.6 percent as self-employed. Sub-metropolitan cities show 41.7 percent as employees, with 56.0 percent as self-employed.

The National Capital Area of the Kathmandu Valley has the highest share of those recording employee status at 53.5 percent and only 3.3 percent of employers, indicating prevalence of a bulk of formal employment. Urban areas show 46.1 percent employees, 2.9 percent employers, and a majority (50.9%) being self-employed. Peri-urban areas have relatively small employee share at 31.8 percent and employer at 1.4 percent, while the rate of the self-employed population dominates at 67.1 percent.

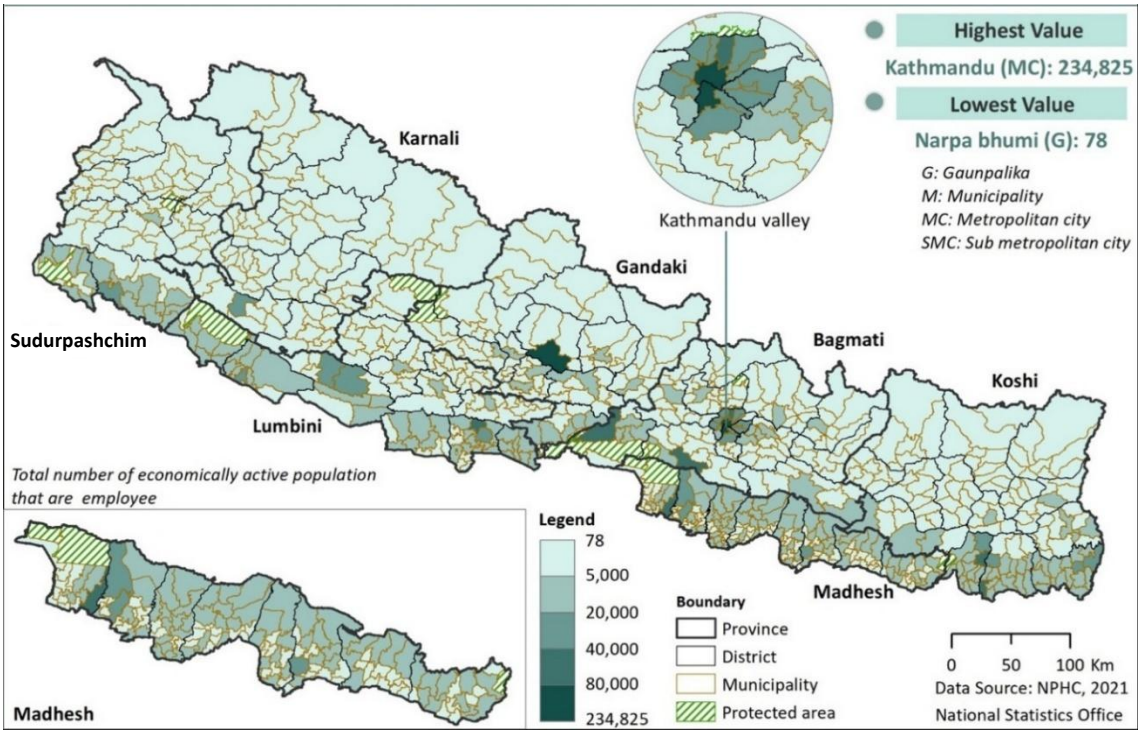
Table 43: Economically active population by employment status

Boundary	2011			2021			2011-2021
	Employee	Employer	Self-employed	Employee	Employer	Self-employed	Change (non-employee)
Province							
Koshi	24.7	2.6	68.1	27.1	1.2	71.6	41.6
Madhesh	34.4	3.0	56.7	35.7	1.1	63.2	54.5
Bagmati	32.2	2.6	61.5	36.0	2.2	61.8	34.4
Gandaki	20.1	1.7	73.9	25.9	1.8	72.0	20.3
Lumbini	22.1	1.5	72.2	25.9	1.3	72.7	40.0
Karnali	14.1	1.5	80.5	15.2	1.0	83.8	45.0
Sudurpashchim	16.4	1.5	78.2	19.0	1.0	80.0	39.3
Ecological Belt							
Mountain	12.8	1.6	81.4	14.9	0.9	84.1	17.8
Hill	15.5	1.5	78.7	17.5	1.1	81.3	26.0
Tarai	31.6	2.5	60.9	33.4	1.3	65.3	57.6
Inner Tarai	21.2	1.9	72.9	26.3	1.5	72.1	38.3
Kathmandu Valley	52.7	4.0	40.1	53.5	3.3	43.2	55.8
Municipality Type							
Gaunpalika	17.6	1.7	76.3	19.3	0.8	79.8	28.7
Municipalities	**30.9**	**2.5**	**62.2**	**34.0**	**1.8**	**64.2**	**47.9**
Municipality	26.7	2.3	66.5	30.3	1.4	68.2	46.6
Sub-Metropolitan City	36.8	2.6	55.8	41.7	2.2	56.0	58.4
Metropolitan City	51.8	3.9	41.0	50.7	3.5	45.6	51.0
DEGURBA Class							
Urban	44.6	3.6	47.7	46.1	2.9	50.9	79.3
Peri-urban	29.9	2.3	62.8	31.8	1.1	67.1	46.5
Rural	13.4	1.5	80.9	14.4	0.8	84.7	23.6
Nepal	**25.6**	**2.2**	**67.8**	**28.6**	**1.4**	**69.9**	**39.4**

Source: Population Censuses 2011-2021, NSO

Note: Row percentages do not total 100 as employment status 'not stated' is not included.

Map 9: Economically active population by employment status at Local Level 2021



CHAPTER 5

DEVELOPMENT INDICATORS

5.1 Human development

The HDI is a measure of average achievement in dimensions of health (life expectancy), education (adult literacy and mean years of schooling) and income (GNI per capita). Nepal's, HDI achievement is moderate at 0.587 (2020). However, when the inequality among the population is considered, the human development index declines to 0.439, with a percentage loss of 25.2 percent.

Bagmati and Gandaki provinces show a greater HDI than the national average. Their HDI for these provinces is 0.661 and 0.618, respectively. Nationally, Bagmati has the highest HDI. All of the remaining five provinces have a lower HDI than national average, with Madhesh scoring the lowest HDI. However, due to higher inequality, the IHDI is the lowest in Karnali at 0.375, followed by Madhesh (0.387), Sudurpashchim (0.4), Lumbini (0.417) and Koshi (0.427).

The HDI varies significantly by municipality type in Nepal. Municipalities have the highest HDI at 0.647, followed by the national average of 0.587, while Gaunpalikas lag behind at 0.561. Over time, HDI improvements are reflected in percentage changes: Gaunpalikas saw a 24.2 percent increase, municipalities 25.5 percent, and Nepal overall 25.2 percent. This highlights a persistent municipalities-Gaunpalikas development gap, with municipalities outperforming Gaunpalikas in human development outcomes.

Table 44: Human development index and inequality adjusted HDI, 2020

Boundary	HDI[22]	Inequality Adjusted HDI - IHDI	% Loss
Province			
Koshi	0.58	0.427	26.4
Madhesh	0.51	0.387	24.1
Bagmati	0.661	0.502	24
Gandaki	0.618	0.441	28.6
Lumbini	0.563	0.417	25.9
Karnali	0.538	0.375	30.4
Sudurpashchim	0.547	0.4	26.9

[22] HDI as a measure of progress in three dimensions: education, health and living conditions that enhances the ability to lead a decent life.

Boundary	HDI[22]	Inequality Adjusted HDI - IHDI	% Loss
Municipality Type			
Gaunpalika	0.561	0.425	24.2
Municipalities	0.647	0.482	25.5
Nepal	**0.587**	**0.439**	**25.2**

Source: NHDR 2020, NPC (Table A 2.1 Human Development Index for Nepal by Province and Region)

5.2 Measures of poverty

The Multidimensional Poverty Index (MPI) is a compositive measure of health, education, and living standard which is measured by multiple indicators[23]. Nationally, the multi-dimensionally poor population is 17.4 percent, and the average percentage of dimensions/indicators in which the poor population are deprived is 42.5. Overall, the MPI as of 2021 is 0.074.

Province wise, a huge disparity in the incidence of poverty is seen to exist. The muti-dimensionally poor population is the lowest in Bagmati at 7 percent. It is followed by Gandaki (9.6%), and Koshi (15.9%). Karnali has the highest multi-dimensionally poor population at 39.5 percent, followed by Sudurpashchim at 25.3 percent, Madhesh at 24.2 percent, and Lumbini at 18.2 percent.

Table 45 Multi-dimensional poverty index[24]

Boundary	Incidence (H)	Intensity (A)	MPI=(H/100) *(A/100)	Population share (%)	Number of poor (000)	Distribution of poor (%)
Province						
Koshi	15.9	41.4	0.066	17	773	15.5
Madhesh	24.2	45	0.109	18.7	1,296	26.02
Bagmati	7	40.3	0.028	23.3	470	9.43
Gandaki	9.6	36.4	0.035	8.2	227	4.55
Lumbini	18.2	43.1	0.078	18.4	958	19.23
Karnali	39.5	42.9	0.169	5.6	636	12.77

[23] Where health is measured by indicators including (i) nutrition (weightage 1/6), (ii) child mortality (1/6). Education is measured by (iii) years of schooling (1/6) and (iv) school attendance (1/6). Living standard is measured by (v) cooking fuel (1/18), (vi) sanitation (1/18), (vii) drinking water (1/18), (viii) electricity (1/18), (ix) housing (1/18), (x) assets (1/18). Incidence or headcount ratio (H) refers to percentage of people who are multi-dimensionally poor, while intensity (A) refers to average percentage of dimensions/indicators in which poor people are deprived. MPI is a function of H and A (M = H * A).

[24] The incidence of poverty (or the proportion of people identified as multidimensionally poor, H) and the intensity of poverty (or the average proportion of weighted indicators in which the poor are deprived in, A). MPI is aligned with HDI and measured in three dimensions: education, health and living conditions and derived based on 10 indicators.

Boundary	Incidence (H)	Intensity (A)	MPI=(H/100) *(A/100)	Population share (%)	Number of poor (000)	Distribution of poor (%)
Sudurpashchim	25.3	41.3	0.105	8.7	631	12.67
Municipality Type						
Gaunpalika	28.0	42.4	0.119	32.7	2,610	52.4
Municipalities	12.3	42.6	0.053	67.3	2370	47.6
Nepal	**17.4**	**42.5**	**0.074**	**100**	**4,980**	**100**

Source: Nepal Multidimensional Poverty Index 2021, NPC

The national poverty line is the aggregate of the food and the non-food poverty lines. According to data from the Nepal Living Standards Survey 2022-23, the national poverty line is at the amount of NPR 72,908 per person, per annum. The food poverty line is at the amount of NPR 35,029 and the non-food poverty line is at the amount of NPR 37,879.

According to the 2022-23 classification, an individual in Nepal is classified as poor if their annual per capita total consumption expenditure is less than NPR 72,908. Using this definition, 20.3 percent of the population are below the poverty line nationally. The poverty gap shows that the average per capita consumption of individuals falls below the poverty line by 4.5 percent. The poverty gap squared shows that the severity of poverty – where the average consumption moves further away from the poverty line – is 1.5 percent. Inequality in consumption expenditure between households tends to be substantial at 30 percent.

Sudurpashchim shows the highest poverty rate at 34.2 percent. Karnali shows a rate of 26.7 percent, Lumbini at 24.4 percent, and Madhesh at 22.5 percent. The poverty rate in Koshi is at 17.2 percent, and at 12.6 percent in Bagmati. Gandaki shows the lowest poverty rate of 11.9 percent. The poverty rate is lower when approaching the data via municipality than when compared to Gaunpalika. The poverty rate in Kathmandu Valley is the lowest at 7.3. percent, indicating that poverty rates see a decline with the increased level of urbanization.

Table 46: Poverty profile in Nepal at the administrative level, 2022-23

Region	Poverty Incidence				Distribution	
	Headcount Rate	Poverty Gap[25] (%)	Poverty gap squared[26] (%)	Gini Index[27] (x100)	of the poor	of the population
Province						
Koshi	17.2	3.8	1.3	29.5	13.8	16.3
Madhesh	22.5	4.6	1.4	29.0	25.1	22.6
Bagmati	12.6	2.6	0.9	29.4	12.1	20.4
Gandaki	11.9	2.3	0.7	27.5	4.9	8.3
Lumbini	24.4	5.8	2.0	30.4	22.8	19.0
Karnali	26.7	6.3	2.2	30.6	6.7	5.1
Sudurpashchim	34.2	8.4	2.9	28.0	14.0	8.3
Ecological Belt						
Mountain	27.5	6.4	2.3	29.5	12.0	8.8
Hill	22.4	5.1	1.8	29.0	21.5	19.4
Inner Tarai	17.4	3.8	1.3	29.4	9.6	11.2
Tarai	21.6	4.8	1.5	27.5	53.0	49.7
Kathmandu Valley	7.3	1.2	0.3	30.4	3.9	10.8
Municipality Type						
Gaunpalika	24.7	5.6	1.9	28.7	37.1	30.5
Municipalities	18.3	4.0	1.3	30.3	62.9	69.5
Nepal	**20.3**	**4.5**	**1.5**	**30.0**	**100**	**100**

Source: Nepal Living Standards Survey IV 2022-23, NSO 2024

[25] The poverty gap index measures the extent to which the mean income of individuals on average fall below the poverty line as a proportion of the poverty line. A Poverty Gap index of 0 indicates no one is below the poverty line, and a value of 100 indicates zero income for all individuals

[26] The Squared Poverty Gap, a weighted sum of the poverty gaps, measures poverty severity among the poor. With weights proportional to the poverty gap, it puts more weight on the individuals whose observed consumption is farther away from the poverty line.

[27] The Gini index is a measure of statistical dispersion and captures the extent of consumption inequality in Nepal. The Gini index is based on inequality in the per capita consumption expenditures, adjusted to account for spatial and seasonal price differences. The Gini measures the amount by which any two households differ in terms of per capita spending, relative to the average. The Gini index ranges between 0 to 1, where a value of 0.0 represents perfect equality, while a Gini of 1.0 reflects perfect inequality.

The poverty rate of households is shown to be lower within a radial distance of 30 minutes from urban facilities. Beyond this distance, the poverty rate tends to increase. Poverty rates are sensitive with regard to the proximity to health facilities, economic facilities, agriculture extension services, and basic urban services. Poverty rates are lower when households are in closer proximity to health facilities (particularly community hospitals, primary health centres, private hospitals, government hospitals and urban health centres), economic facilities (particularly Haat bazar centres, core markets and banks and financial institutions), and agricultural and livestock service centres. The poverty rate increases with lagging quality of basic urban services and is found to be higher with poor road conditions (16.78) and areas with reduced access to source of drinking water (17.04).

Table 47: Poverty rates by household's access to basic facilities

SN	Type of Facilities	Poverty rate of households within 30 minutes distance				Poverty rate of households beyond 30 minutes distance			
		Urban	Peri-urban	Rural	Total	Urban	Peri-urban	Rural	Total
1	Early childhood development centre	9.7	22.3	28.3	**19.8**	31.3	18.5	32.7	**31.3**
2	Basic school	9.7	22.1	26.5	**18.9**	23.6	30.7	35.3	**34.3**
3	Secondary school	9.6	21.0	22.3	**16.9**	19.1	35.5	34.9	**34.2**
4	Government hospital	8.5	17.8	13.3	**12.6**	15.0	26.4	30.8	**27.1**
5	Core market	6.8	19.8	21.8	**14.9**	48.9	32.8	33.5	**34.6**
6	Bank/Financial institution	8.9	20.2	19.0	**15.5**	29.6	37.0	34.3	**34.6**
7	Police station	9.6	21.4	21.4	**16.9**	15.1	31.2	34.2	**32.5**
8	Ward office	9.7	22.2	25.1	**18.3**	15.4	23.1	33.6	**31.1**
9	Collage/Campus/ University	9.3	18.7	17.0	**14.2**	14.9	29.0	32.3	**29.9**
10	Basic health centre/Urban health centre	8.9	19.7	24.6	**16.5**	12.9	26.6	32.0	**26.2**
11	Health post	9.8	22.2	23.0	**18.4**	10.0	22.5	34.1	**25.2**
12	Primary health centre	8.1	21.9	22.8	**16.2**	12.8	22.8	30.1	**23.8**
13	Community hospital	6.5	15.4	15.4	**10.7**	13.6	25.4	30.2	**24.6**
14	Private clinic	9.7	22.1	23.4	**17.7**	13.7	24.1	34.3	**31.3**
15	Private hospital	8.2	18.0	16.3	**13.2**	20.5	29.5	31.2	**29.6**
16	Paved road	9.4	22.1	22.1	**17.3**	25.1	27.1	33.7	**32.8**
17	Dirt road/Motorable road	14.1	22.5	27.8	**22.4**	4.3	21.6	41.6	**13.4**
18	Haat bazar centre	6.5	22.9	16.7	**17.8**	12.3	20.1	30.8	**22.5**

SN	Type of Facilities	Poverty rate of households within 30 minutes distance				Poverty rate of households beyond 30 minutes distance			
		Urban	Peri-urban	Rural	Total	Urban	Peri-urban	Rural	Total
19	Agricultural /Livestock service centre	9.0	21.2	23.4	**16.9**	19.2	29.6	32.9	**30.6**
20	Cooperatives	9.7	21.4	23.1	**17.4**	18.4	35.8	35.6	**35.0**
21	Source of drinking water in rainy season	16.8	14.7	31.3	**23.0**	7.6	24.3	26.3	**19.1**
22	Source of drinking water in dry season	17.0	14.3	31.1	**23.0**	7.5	24.5	26.3	**19.0**
23	Community library	9.2	12.7	11.9	**10.5**	11.3	25.8	30.7	**25.5**

Source: Nepal Living Standards Survey IV 2022-23, NSO 2024

5.3 Macroeconomic indicators

The data shows an association between urbanization level and GDP. Bagmati Province, with a relatively higher level of urbanization at 56.2 percent, has a higher GDP of USD 2,455. The higher GDP is contributed by its large service sector (77.4%) and modest manufacturing sector (11.4%).

On the other hand, low levels of urbanization are seen in Sudurpashchim, Karnali, and Lumbini provinces (at 13.1%, 15.9%, and 16.8% respectively) correlate to lower GDP rates (USD 1,063, USD 997, and USD 1,126 respectively). The GDP of these provinces show a relatively smaller service sector share at 53.1 percent, 58.9 percent, and 55.5 percent, while the share of the manufacturing sector is also seen to be modest at 13.5 percent, 10.3 percent, and 14.7 percent respectively across the same set of provinces.

Koshi and Gandaki show low to modest levels of urbanization at 22.9 percent and 26.2 percent, paired with the GDP figures of USD 1,299 and USD 1,493, respectively. These provinces also have a relatively smaller service sector GDP share at 50 percent and 56 percent, yet the provinces both demonstrate a higher overall share in manufacturing sectors at the rates of 16.8 percent and 18.1 percent, respectively.

Among all the provinces, Madhesh appears to be an outlier. Despite its urbanization level being low to modest at 20.7 percent, the province's GDP is at the low figure of USD 875. Madhesh has a relatively smaller service sector GDP share at 53.4 percent, with manufacturing also accounting for the modest percentage share of 11.4 percent, which may account for this finding.

Table 48: Gross domestic product and share of major economic sector

Province	Urbanization level (%)		GDP per capita 2021/22 (US$)	% share by province	% share of sector in GDP		
	Urban	Peri-urban			Agriculture	Manufa cturing	Service
Koshi	22.9	41.1	1299	15.8	33.2	16.8	50
Madhesh	20.7	73.5	875	13.1	35.2	11.4	53.4
Bagmati	56.2	14.3	2455	36.8	11.2	11.4	77.4
Gandaki	26.2	23.1	1493	9	25.9	18.1	56
Lumbini	16.8	52.2	1126	14.2	29.8	14.7	55.5
Karnali	15.9	4.4	997	4.1	30.8	10.3	58.9
Sudurpashchim	13.1	30.9	1063	7	33.4	13.5	53.1
Nepal	**27.3**	**39.6**	**1399**	**100**	**24.1**	**13.5**	**62.4**

Source: Economic Survey 2022/23, Ministry of Finance (2023)

5.4 Business establishments

Nationally, the number of business establishments (BE) is at a figure close to one million (923,356). Of this figure of, around half (50.1%) are registered, yet almost half (49.9%) are not registered in the government institutions. The ratio of persons engaged per establishment is 3.5.

Province wise, at 30.63 percent, Bagmati contains the highest share of business establishments. The rate of persons engaged per establishment is also higher in Bagmati at an average of 4.3. Following this, Koshi shows a percentage share of 18.3 of total establishments, with Lumbini accounting for 16 percent, Madhesh with 12.73 percent, and Gandaki with 10.9 percent of the total share of business establishments. Karnali and Sudurpashchim have relatively fewer establishments, with a share of 4.6 percent and 6.8 percent, respectively. These provinces also have a fewer average figure of persons engaged per establishment at 2.8 and 2.9 respectively, indicating that business establishments in these regions are of a smaller nature. Madhesh Province shows a large number of unregistered business establishments (64.6%), followed by Karnali (51.2%).

Table 49: Distribution of business establishments

Province	No. of BE	% share	Registered	% share	Not registered	% share	Persons engaged (PE)	PE in%	PE/BE
Koshi	168,469	18.3	90,192	53.5	78,277	46.5	543,475	16.8	3.2
Madhesh	117,522	12.7	41,594	35.4	75,928	64.6	354,703	11.0	3.0
Bagmati	282,812	30.6	141,949	50.2	140,863	49.8	1,217,320	37.7	4.3
Gandaki	100,682	10.9	55,872	55.5	44,810	44.5	332,467	10.3	3.3
Lumbini	147,775	16.0	77,383	52.4	70,392	47.6	474,182	14.7	3.2
Karnali	42,804	4.6	20,883	48.8	21,921	51.2	118,946	3.7	2.8

Province	No. of BE	% share	Registered	% share	Not registered	% share	Persons engaged (PE)	PE in%	PE/BE
Sudur-pashchim	62,963	6.8	34,732	55.2	28,231	44.8	185,191	5.7	2.9
Not Stated	329	0.0					2,173	0.1	
Nepal	**923,356**	**100**	**462,605**	**50.10**	**460,422**	**49.90**	**3,228,457**	**100**	**3.5**

Source: Nepal Economic Census, 2018

5.5 Urbanization level and development indicators

Bagmati Province shows a relatively higher urbanization level at 56.2 percent, with its per capita GDP also comparatively higher at USD 2,455. The human development achievement of this province is high at 0.661, while the multi-dimensional poverty rate is low at 0.028. Thus, Bagmati's case reveals the positive ramification of higher urbanization level on development indicators such as GDP, human development, and poverty reduction.

In comparison, Madhesh Province, despite its modest urbanization level of 20.7 percent, has a low per capita GDP at USD 875. The province shows a relatively lower human development achievement and a comparatively high MPI rate at 0.109. As earlier referenced, Madhesh represents the highest rate of unregistered business establishments, reaching almost 65 percent (64.6%) of the total share of business establishments.

Sudurpashchim, Karnali, and Lumbini provinces show low urbanization levels at 13.1 percent, 15.9 percent, and 16.8 percent, respectively. At the figures of USD 1,063, USD 997, and USD 1,126 respectively, the per capita GDP figures of these provinces are also shown to be comparatively low. The human development achievements (HDI) are lower than the national average, while the multi-dimensional poverty indices are greater than national average. The case of Sudurpashchim, Karnali, Lumbini, and Madhesh reveals the implications of low urbanization levels on low GDP, low human development achievement, and higher multi-dimensional poverty index figures.

Table 50: Urbanization level and development indicators, 2022/23

Province	Urbanization level (urban %)	GDP per capita (US$)	HDI	MPI
Koshi	22.9	1299	0.580	0.066
Madhesh	20.7	875	0.510	0.109
Bagmati	56.2	2455	0.661	0.028
Gandaki	26.2	1493	0.618	0.035
Lumbini	16.8	1126	0.563	0.078
Karnali	15.9	997	0.538	0.169
Sudurpashchim	13.1	1063	0.547	0.105
Nepal	**27.3**	**1399**	**0.587**	**0.074**

Source: Economic Survey 2022/23, Ministry of Finance (2023)

CHAPTER 6

REGRESSION ANALYSIS

6.1 Regression analysis on urbanity

This study examines how socio-economic factors - such as employment, housing, and infrastructure accessibility - influence urbanization and its characteristics. By analysing these relationships, it is possible to identify key drivers of urban development, assess disparities in living standards, and inform policies for sustainable urban growth.

A binary logistic regression model was applied to classify wards (the lowest administrative level) as urban or non-urban (combining peri-urban and rural). The classification was based on thresholds of population density, building density, and spatial contiguity, covering 6,743 wards. Predictor variables included demographic, housing, and socio-economic data from the National Population and Housing Census (NPHC) and other secondary sources. Where ward-level data were unavailable, mean values at the Palika level (municipal bodies) were substituted.

A separate linear regression model assessed the proportion of urban population relative to the total population at the Palika level. Predictor variables consisted of Palika-level averages, explaining urban characteristics across constituent wards. This model estimated the probability of an area being urban based on aggregated socio-economic factors.

6.2 Regression diagnostic tests and correlations

Two distinct regression approaches were employed to determine the key correlates of urbanity. These variables play a critical role in defining and updating urban classifications in the future. Most predictors were sourced from the 2021 NPHC at the ward level. Where ward-level data were unavailable, aggregated values at the Palika (Local Level) were used to explain variability across municipalities.

Before interpreting regression results, it is essential to validate model assumptions and assess the reliability of the relationships between variables. Before conducting regression analysis, pairwise correlations between variables were examined to identify suitable candidate predictors. This step ensured that only meaningful and non-redundant variables were included in the models.

The correlation analysis examines pairwise associations between predictor variables to detect multicollinearity, or highly correlated predictors that can distort regression results. Pearson correlation coefficients were calculated to test the multi-collinearity. (See Annex 3)

For logistic regression (binary urban classification) the multicollinearity was further validated by Variance Inflation Factor (VIF) values. The results of both regression analyses are presented in Annex 4.

To assess the causation of the urban areas, the functional relationship between the indicators of urbanity was tested with the potential explanatory variables. They were:

i. a measure of degree of urbanization (deg_urb)

ii. the proportion of urban population in Palika (share_urb)

iii. municipality compared to a Gaunpalika (adm_urb)

The variables used in this regression is as given below:

variable name	variable label
adaptivility	Adaptive capacity against climate change
adm_urb	**Municipalities=1, Gaunpalikas=0 classified by Local Level**
building_ha	Number of total buildings per hectare at Palika
deg_urb	**Urban wards=1, else=0 defined by DEGURBA classification**
dpndnc_ratio	Dependency ratio at ward
emp_nagri	Proportion of employed popln. in non-agri. sector at ward
floor3plus	Proportion of buildings with 3+ floors at Palika
hhld_bldng	Number of resident buildings per household at Palika
hhsize	Average household size at ward
hlth_000pop	Number of health institutions per 1000 population at ward
int_migrant	Proportion of internal migrant at ward
no_helth_ins	Number of health institutions at ward
no_school1	Number of schools at ward
p_fm_lnd_hus	Proportion of hholds with women's ownership of land/house
s_dwater_in	Share of household with water supply within house at ward
s_rent_hh	Share of household with rental housing at ward
s_roof_rcc	Share of household with RCC roof at ward
s_toilet_sw	Share of household with toilet connected to sewerage at ward
s_wash_ac	Share of household with washing machine/AC at ward

variable name	variable label
scnd_health	Proportion of advanced health institutions at ward
sensitivity	Sensitivity to climate-induced hazards/extreme events
sensitivity	Sensitivity to climate-induced hazards/extreme events
share_urb	**Proportion of urban wards in Local Level**
skul_000pop	Number of schools per 1000 population at ward
sp_absent	Share of household with absent member at Palika
sp_absent_f	Share of female absentee at Palika
sp_agri_land	Share of land under agri. holding to Palika area
sp_crop_land	Share of crop land to land under agri. holding at Palika
sp_emp_govt	Share of employment in government sector at Palika
sp_ocu_manf	Proportion of occupation in manufacturing at Palika
sp_sse	Share of household with small-scale enterprise at Palika
sp_trade	Share of trade in small-scale enterprise at Palika
vulnrability	Overall climate change vulnerability
year0_9	Proportion of buildings aged <=9 years at Palika

6.3 Regression on DEGURBA classification of urbanity

This study ran a logistic regression model aiming to predict a binary outcome variable called `deg_urb` (a measure of degree of urbanization), based on these predictor variables. The logistic regression model examines factors influencing urban wards (versus non-urban) using 6,743 observations. The model is statistically significant (LR chi² (18) = 2722.58, $p < 0.000$) with a Pseudo R^2 of 0.4927, indicating a good fit.

The logistic regression coefficients are in log-odds. This is the ratio of odds, i.e. probability of success over probability of failure p/(1-p) of the dependent variable and the ratio of explanatory variables. The 18 explanatory variables turned out to be significant to explain the variability on urbanity by 49.3 percent.

A strong positive association (higher urbanity likelihood) is observed with regard to rental housing having huge effect (OR = 229.57, $p < 0.001$) and non-agricultural employment is turned out to be one of the major predictors (OR = 31.75, $p < 0.001$) of urbanity. Variables such as dependency ratio, RCC roofs, within-house water supply, proportion of agricultural land in Palika, building density, multi-story buildings, and newer buildings all significantly increase urban likelihood. Climate sensitivity at Palika level shows strong positive link (OR = 6.84, $p < 0.001$).

A negative association (or lower urbanity likelihood) is observed with regard to the share of women's land/house ownership, small-scale enterprises, absent household members, and cropland share which reduces urban probability. The mixed effect of adaptive capacity with environment shows negative effect (OR = 0.25, p = 0.001) while climate change vulnerability and number of schools at ward (OR = 1.04, p = 0.054) marginally increases urban odds (OR = 1.70, p = 0.031).

The model highlights that economic structure (non-agricultural jobs, rental housing), infrastructure (buildings, water access), and climate factors strongly shape urbanity, while agricultural ties and female land ownership reduce urban likelihood. These key correlates of urbanity should be considered when designating urban areas in the future.

Logistic regression model

Number of observations	=	6,743
LR chi2(18)	=	2722.58
Prob > chi2	=	0.0000
Pseudo R2	=	0.4927
Log likelihood	=	-1401.82

Regression Output Table

deg_urb	Odds Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
dpndnc_ratio	23.733	13.740	5.47	0.000	7.631	73.818
s_rent_hh	229.567	184.169	6.78	0.000	47.648	1106.062
s_roof_rcc	2.812	0.833	3.49	0.000	1.574	5.024
s_dwater_in	2.289	0.529	3.58	0.000	1.455	3.600
sp_agri_land	4.286	1.203	5.19	0.000	2.473	7.430
no_school1	1.036	0.019	1.92	0.054	0.999	1.074
no_helth_ins	1.111	0.048	2.44	0.015	1.021	1.208
emp_nagri	31.747	12.569	8.73	0.000	14.611	68.978
building_ha	1.026	0.002	11.02	0.000	1.021	1.030
floor3plus	5.237	2.315	3.74	0.000	2.202	12.457
year0_9	5.011	2.129	3.79	0.000	2.179	11.525
p_fm_lnd_hus	0.256	0.155	-2.25	0.024	0.078	0.839
sp_sse	0.008	0.014	-2.91	0.004	0.000	0.211
sp_absent	0.272	0.153	-2.32	0.021	0.091	0.819

deg_urb	Odds Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
sp_crop_land	0.065	0.061	-2.94	0.003	0.011	0.403
sensitivity	6.843	2.709	4.86	0.000	3.150	14.869
adaptivility	0.249	0.106	-3.26	0.001	0.108	0.575
vulnrability	1.700	0.419	2.15	0.031	1.049	2.755
_cons	**0.003**	**0.003**	**-6.01**	**0.000**	**0.000**	**0.018**

6.4 Regression on share of urban population

This linear regression model examines factors influencing the proportion of urban population in Palika (share_urb) across 6,743 observations. The model is highly significant ($F(20, 6722) = 636.81$, $p < 0.000$) and explains 63.17 percent of the variance ($R^2 = 0.6317$), indicating a strong fit. The Root Mean Squared Error (RMSE) of 0.13714 reflects the average deviation of the observed values from the predicted values.

The strongest positive predictors of urbanity (or higher urban share) are the largest effect of the following: employment in the manufacturing sector (Coef. = 1.51); government employment as a major contributor (Coef. = 2.73); high-rise buildings with more than three floors having strong association (Coef. = 0.28); households with washing machines/AC indicating affluence marker (Coef. = 0.73); sewerage-connected toilets as infrastructure effect (Coef. = 0.22); and climate sensitivity with a positive link (Coef. = 0.20).

The negative predictors (or lower urban share) are found to be climate vulnerability that reduces urbanity (Coef. = -0.10); proportion of crop land at Palika shows agricultural ties decrease urbanity (Coef. = -0.13); absentee households with negative effect (Coef. = -0.09); and women's land ownership with a slight reduction (Coef. = -0.06, p = 0.003).

Other notable associations are surprisingly positive female absenteeism (Coef. = 0.30); dependency ratio increasing urbanity (Coef. = 0.15); health institutions per 1,000 population with a negative effect (Coef. = -0.02); and household size having a small negative impact (Coef. = -0.01).

Urbanity is strongly linked to economic structure (manufacturing, government jobs), infrastructure (high-rises, sanitation, appliances), and climate factors, while agricultural dependence, vulnerability, and traditional household structures reduce urban concentration. The model highlights the role of employment patterns, built environment, and socio-economic development in shaping urbanization.

Linear regression model

Number of observations	=	6,743
F(20, 6722)	=	636.81
Prob > F	=	0.0000
R-squared	=	0.6317
Root MSE	=	0.13714

Regression Output Table

share_urb	Coef.	Robust Std. Err.	t	P>t	[95% Conf.	Interval]
s_toilet_sw	0.215195	0.0208714	10.31	0.000	0.1742804	0.2561096
sp_ocu_manf	1.510442	0.0765776	19.72	0.000	1.360326	1.660558
floor3plus	0.2794662	0.0148522	18.82	0.000	0.2503512	0.3085812
s_roof_rcc	0.0968259	0.0126864	7.63	0.000	0.0719565	0.1216953
sensitivity	0.2019996	0.0135579	14.9	0.000	0.175422	0.2285773
s_wash_ac	0.7268933	0.0600148	12.11	0.000	0.6092452	0.8445413
vulnrability	-0.099654	0.009452	-10.54	0.000	-0.118183	-0.081125
sp_emp_govt	2.731344	0.2569202	10.63	0.000	2.227699	3.234989
sp_agri_land	0.1701858	0.0103008	16.52	0.000	0.149993	0.1903786
sp_absent_f	0.298234	0.0245317	12.16	0.000	0.2501441	0.3463239
dpndnc_ratio	0.1473382	0.0223696	6.59	0.000	0.1034868	0.1911897
hlth_000pop	-0.0241397	0.0035475	-6.8	0.000	-0.0310939	-0.0171855
sp_crop_land	-0.1271396	0.0261295	-4.87	0.000	-0.1783616	-0.0759175
sp_absent	-0.0896203	0.0184838	-4.85	0.000	-0.1258544	-0.0533861
p_fm_lnd_hus	-0.064248	0.0216684	-2.97	0.003	-0.106725	-0.0217709
scnd_health	0.0019372	0.0004728	4.1	0.000	0.0010104	0.002864
building_ha	0.0000287	8.52E-06	3.36	0.001	0.0000119	0.0000454
hhsize	-0.0142542	0.0036434	-3.91	0.000	-0.0213964	-0.007112
sp_trade	0.0415984	0.0126003	3.3	0.001	0.0168978	0.066299
int_migrant	-0.0006154	0.0001984	-3.1	0.002	-0.0010044	-0.0002264
_cons	**-0.1734806**	**0.0291498**	**-5.95**	**0**	**-0.2306235**	**-0.1163377**

6.5 Regression on municipal population

This logistic regression model predicts the likelihood of a household being located in a municipality (1) compared to a Gaunpalika (0) based on various socio-economic and infrastructural predictors. Below is a detailed interpretation of the results:

The number of observations used in the model is 6,743 households. The likelihood ratio (LR) Chi-Square (18 degrees of freedom) is 4663.33, with a p-value < 0.000, indicating that the model as a whole is highly significant. The pseudo-R^2 (0.4996) suggests that the model explains about 50 percent of the variance in urbanity, which is a strong fit for logistic regression. The log-likelihood used for comparing nested models is -2334.96. An odds ratio (OR) > 1 means the predictor increases the likelihood of being in a municipality, while OR < 1 decreases it. With a household size OR = 0.815 explains that the larger households are less likely to be in municipalities (OR < 1). For each additional member, the odds decrease by 18.5 percent (1 - 0.815).

The higher dependency ratios (more dependents per working member) reduce urban residency likelihood with OR = 0.419 is marginally significant, p=0.05. Households with more internal migrants (OR = 1.017) are slightly more likely to be in municipalities (1.7% increase per migrant).

On economic and occupational factors, share of population engaged in trade (OR = 10.736) suggests that the households involved in trade are ~10.7 times more likely to be in municipalities (strong urban economic activity). Surprisingly, non-agricultural employment reduces urban residency likelihood (OR = 0.139). This might indicate informal sector jobs in rural areas or model specification issues.

Owning agricultural land drastically reduces urban residency odds (97.7% lower), confirming rural ties. Crop land ownership reduces urban odds by 81.4 percent (OR = 0.186). More health facilities per capita are linked to lower urban odds (OR = 0.466), possibly reflecting rural health posts. Higher school density reduces urban likelihood (OR = 0.806), suggesting rural education access.

More built-up area increases urban odds (17.9% per unit), reflecting urban density. Multi-story buildings are 18x more likely in municipalities (urban vertical growth). Higher vulnerability drastically lowers urban odds (99.7% less), as rural areas face more risks. Recent buildings show higher urban residency (urbanization trend). Female-owned land increases urban odds, possibly due to urban land rights.

Trade, multi-story buildings, internal migration, and built-up area strongly predict municipal residency are urban pull factors. Agricultural land, dependency ratios, and vulnerability indices anchor households in Gaunpalikas are the rural retention factors. Urbanization is driven by economic opportunities (trade) and infrastructure, while rural areas retain agricultural and vulnerable populations. Extreme odds ratios may need robustness checks. The model fits well but could benefit from validation.

Logistic regression model

Number of observations	=	6,743
LR chi2(18)	=	4663.33
Prob > chi2	=	0.0000
Pseudo R2	=	0.4996
Log likelihood	=	-2334.9601

Regression Output

adm_urb	Odds Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
hhsize	0.815	0.060	-2.79	0.005	0.706	0.941
dpndnc_ratio	0.419	0.186	-1.96	0.050	0.175	1.000
sp_trade	10.736	2.761	9.23	0.000	6.486	17.772
sp_agri_land	0.023	0.006	-15.06	0.000	0.014	0.037
s_dwater_in	0.764	0.120	-1.71	0.086	0.562	1.039
sp_sse	13.202	10.255	3.32	0.001	2.880	60.510
emp_nagri	0.139	0.045	-6.07	0.000	0.074	0.263
int_migrant	1.017	0.005	3.65	0.000	1.008	1.026
hlth_000pop	0.466	0.043	-8.26	0.000	0.389	0.558
skul_000pop	0.806	0.037	-4.74	0.000	0.738	0.881
vulnrability	0.003	0.001	-26.76	0.000	0.002	0.005
building_ha	1.179	0.010	20.01	0.000	1.160	1.198
hhld_bldng	10218	4961	19.01	0.000	3945	26464
floor3plus	18.234	5.085	10.41	0.000	10.557	31.496
year0_9	4.248	1.112	5.53	0.000	2.543	7.097
sp_crop_land	0.186	0.104	-3.01	0.003	0.062	0.555
s_wash_ac	0.000	0.000	-3.93	0.000	0.000	0.003
p_fm_lnd_hus	4.286	2.025	3.08	0.002	1.698	10.822
_cons	**0.001**	**0.001**	**-9.8**	**0.000**	**0.000**	**0.005**

CHAPTER 7

KEY FINDINGS

7.1 Factors of urbanization

1. The relative faster pace of designation of municipalities after 1981 tends to indicate the gradual rise of urbanization pressure in Nepal. With federal restructuring in 2015, 3,915 VDCs and 58 municipalities were reclassified as 460 Gaunpalikas and 293 municipalities. Population living in VDCs/Gaunpalikas were reduced dramatically from 82.0 to 33.8 percent, while populations classified as living in municipalities increased from 17.1 to 66.2 percent.

2. The number of households and population concentration is comparatively large in four provinces - Bagmati, Koshi, Madhesh, and Lumbini. Bagmati. Madhesh also has a large population density of 6.87 and Karnali has the lowest density 0.67 ppHa. Around two-third municipalities (193 out of 293) of the municipalities have a very low population density of less than 5 persons per hectare - indicating primarily rural characteristics of these municipalities.

3. Between 2011 and 2021, the overall population of Nepal grew at Annual Growth Rate (AGR) of about 0.92 percent. During the same period, Municipalities grew only modestly at AGR of 1.36 percent. The growth of Gaunpalikas was largely stagnant - with AGR of 0.11 percent. If Pokhara Metropolitan City is to be excluded, Gandaki Province shows a negative growth rate. In 2021, one out of every four (73 out of 293) municipalities shows negative annual growth rate (AGR<0) indicating decline with potential out-migration.

4. The majority of the municipal population (59.4%) live in medium sized municipalities, having a population between 50,000-200,000. Furthermore, a quarter of the municipal population (26.1%) live in smaller municipalities - having a population less than 50,000. Only small proportion of the municipal population (14.4%) live in large municipalities exceeding population of 200,000.

5. Two-thirds (66.6%) population of municipalities belongs to usually economically productive age. The share of ageing population (65+) is just around6.6 percent. Male population is lower than female (although an exception exists at age cohort of 55-59 years) indicating potentially higher incidence of absentees among male to seek employment opportunities abroad.

6. The data tends to indicate that migration to the Tarai is potentially contributed by shift of population from the Hill and the Mountain, migration from India, and shift of population from one local unit to another within Tarai itself.

7. The ranking of municipalities by population shows that urbanization is much more concentrated in cities such as Kathmandu, Lalitpur, and Pokhara of the hill valleys; Bharatpur and Ghorahi of Inner Tarai; and selected cities such as Biratnagar, Birgunj, Itahari at industrial corridor or the newly designated provincial capital cities such as Janakpurdham, and Dhangadhi in Tarai.

8. Based on DEGURBA analysis, the national urbanization level - i.e. people living in urban areas is 27.3 percent. Among the provinces, Bagmati has the highest urbanization level at 56.2 percent. Kathmandu Valley is by far the most urbanized area in the country with an urbanization level of 91.7 percent. Hill and Mountain have limited urbanization levels at 17 percent and 11.6 percent respectively with both ecological belts containing a limited peri-urban population.

9. The primacy of Kathmandu metropolitan city compared to other cities is declining, while the population of Kathmandu Valley still dominates the population of other cities. The population size of the Kathmandu Valley is more than double the size of other top three cities after Kathmandu is taken together.

10. Incidences of extreme climate events will increase greatly in the future. Extreme events are the highest in Bagmati Province, regardless of climatic variation and time scale. Similarly, extreme events in the Kathmandu Valley are also highly probable. Moderate climate risk (0.255) prevails nationally in the medium-term (2030), even for moderate climatic variation (RCP 4.5).

11. Urbanization usually takes place on arable land. The area of arable land in Nepal has declined by 16.6 percent between 2011 and 2021, or from 2,162,751 to 1,803,756 ha. Sudurpashchim (9.1%), Gandaki (7%), and Karnali (5.4%) have limited arable land only, indicating limited prospect of large-scale urbanization in these provinces.

12. Rental housing is significant in metropolitan cities at a rate of 42.6 percent. In comparison, Gaunpalikas show a negligible proportion of rental housing at 2.6 percent. The proportion is significantly higher in Kathmandu Valley at 50.1 percent and is also significant in urban areas at the rate of 34.3 percent.

7.2 Urbanization and Infrastructure

1. Local roads are the key indicator of urban-rural linkages, with the largest stock and a density of 1.93 km of road per 1,000 population. District roads are an indicator of inter-city or inter-

settlement connectivity, with a density is 0.88 km of road per 1,000 people. The National Highway connects the National Capital Region with provincial capitals and connects one province with another. Koshi Province has less access to local roads, with a density of 1.7 km per 1,000 population which is lower than the national average of 1.93 km. This indicates potentially lower urban-rural linkages in the province. The connectivity/accessibility condition may be deficient in Madhesh Province despite a high aggregate road density of 13.45 km/1,000 hectare, as there is a larger population with less connectivity, especially with regards to connecting inter-city or inter settlement or strategic roads (1.59 km).

2. A significant proportion of households in municipalities (47.3%), sub-metropolitan areas (39.4%), and metropolitan areas (42.4%) lack access to piped water. This is an indication that the piped water supply is lacking across urban areas, affecting the productivity of urban households.

3. Nationwide access to electricity has significantly improved, from 67.3 percent in 2011 to 92.2 percent in 2021. However, nationally, only 77.8 percent of households have access to national grid-based electricity. Of the seven provinces, Karnali and Sudurpashchim have limited access to national grid electricity sources, at 27 percent and 58.9 percent, respectively.

4. The density of SEFs in Madhesh is 0.8 SEFs per 1,000 population. This tends to indicate a larger population per SEF, thereby potentially entailing that more students are present in each education facility. The higher density of SEFs in terms of area tends to indicate the prevalence of a greater number of education facilities and with a potentially higher degree of choices of education facilities.

5. With regard to health facilities across the provinces, Bagmati has the greatest number of hospitals, with a share of about 30 percent of its total HFs. Karnali has the least number of hospitals, which account 6.95 percent of its total HFs. The density of HFs tends to increase according to administrative hierarchy. The density shows a sharp increase to 3.42 HFs per 1,000 ha in metropolitan cities.

6. The three provinces of Gandaki, Sudurpashchim, and Lumbini contain more than one-quarter of households with at least one absentee in 2021. Madhesh Province shows the highest increase in the number of households with at least one absentee between 2011 and 2021. Municipalities (820,817, 52.8%) and Gaunpalikas (511,395, 32.9%) have the greatest number of households with absentees, with majority being at municipalities. Lumbini has the highest absentee population with almost one-fifth (19.2%) of its population being absent. Males are the dominant absentee population regardless of province, ecological region, administrative units, and degree of urbanization. The female absentee population is

noticeable in Kathmandu Valley and in metropolitan cities. The absence of a large youth population may be an indicator of the declining state of the national labour force. Indigenous and Dalits are main caste/ethnic groups among the absentee population.

7. Household internet ownership is the highest in Kathmandu Valley with ownership rate of 76.6 percent. The trend shows that internet access is becoming greater associated with urban areas.

8. Small Scale Enterprises (SSEs) may contribute to reducing unemployment conditions and poverty. Nationally, household ownership of SSEs is 9.4 percent. The variation in household ownership of SSEs between urban and rural as well as municipality and Gaunpalika is small. Household reliance on SSEs is limited across provinces and local level.

9. Nationally, almost half (49.9%) of all occupations in 2021 fall under the service combined with manufacturing sectors. This is a significant increase from 35.7 percent in 2011. Per province, only Bagmati and Madhesh show a majority of non-agricultural occupations. All other provinces – Karnali (69.8%), Sudurpashchim (65.2%), Koshi (54.5%), Lumbini (54.0%), and Gandaki (51.6%) – have majority of occupations in the agricultural sector.

10. Nationally, the economically active population (EAP) by industrial sector shows a gradual increase of tertiary and secondary sectors between 2011 and 2021. The majority of the national EAP is still engaged in the primary industrial sector with a share of 57.5 percent in 2021. Emerging shifts from primary to secondary and tertiary sectors is visible in municipalities between 2011 and 2021. Sub-metropolitan cities and metropolitan cities show an overwhelming to dominant share of the EAP in the secondary and tertiary sectors, with combined rates reaching 66.6 percent and 82.1 percent, respectively.

11. Nationally, the share of the EAP in the non-government sector is 34.2 percent, indicating a significant share of institutions such as bank and finance, non-finance corporations, and other formal private entities.

7.3 Development Indicators

1. Sub-metropolitan and metropolitan cities are potential generators of formal employment opportunities (indicated by employee and employer status), and market opportunities for self-employment (indicated by self-employed status). However, these appear to be insufficient in creating adequate formal employment opportunities alone as a majority are still self-employed.

2. With regard to the Human Development Index (HDI), Bagmati (0.661) and Gandaki (0.618) provinces show greater HDI than the national average. All remaining provinces have a lower

HDI than national average, with Madhesh showing the lowest HDI. However, the IHDI rate is seen the lowest in Karnali at 0.375.

3. Province wise, a huge disparity exists concerning the incidence of poverty. The multi-dimensionally poor population is the lowest in Bagmati at 7 percent, followed by Gandaki (9.6%), and Koshi (15.9%). Karnali has the highest multi-dimensionally poor population at 39.5 percent, followed by Sudurpashchim at 25.3 percent, Madhesh at 24.2 percent, and Lumbini at 18.2 percent.

4. Nationally, 20.3 percent population live below the poverty line. The poverty gap shows that the average income of individuals falls below the poverty line by 4.5 percent. Inequality between households in consumption expenditure tends to be substantial at 30 percent. Sudurpashchim has the highest poverty rate at 34.2 percent, followed by Karnali at 26.7 percent, Lumbini at 24.4 percent, and Madhesh at 22.5 percent. The poverty rate in Koshi is at 17.2 percent and Bagmati at 12.6 percent. Gandaki has the lowest poverty rate at 11.9 percent.

5. Poverty rate of households is lower within a radial distance of 30 minutes from urban facilities. Beyond this distance, poverty rates tend to increase. The poverty rate is sensitive to proximity to health facilities, economic facilities, agriculture extension services, and basic urban services.

6. Bagmati's case reveals the positive ramification of higher urbanization levels on development indicators such as GDP, human development, and poverty reduction. The case of Sudurpashchim, Karnali, Lumbini and Madhesh reveals that low urbanization levels have implications towards low GDP, low human development achievement, and higher incidences of multi-dimensionally poor populations.

CHAPTER 8

CONCLUSION AND POLICY IMPLICATIONS

8.1 Conclusion

Nepal's urbanization is in a stage of transition, with a relatively small urbanization level of 27.3 percent yet a large peri-urban population of 39.6 percent. Urban areas grew modestly at 1.84 percent per annum between 2011 and 2021, while peri-urban areas grew at a comparatively slower pace. The National Capital Region of Kathmandu Valley is the most urbanized region with an urbanization level at 91.7 percent. Therefore, its primacy is dominant over other urban centres of the country.

The reorganization of administrative boundaries in 2017 has given rise to 293 municipalities and 460 Gaunpalikas, increasing from the previous 58 municipalities and 3915 village development committees. This has resulted in two-thirds of the population living in municipalities, and most of them in medium and small ones. A large proportion (66.6%) of the municipal population is at the economically productive age of 15-64 years, with a relatively small ageing population (65+) at 6.6 percent. However, most of these municipalities have rural characteristics with low population densities of 3.64 ppHa. Only metropolitan cities have a large population density of 21.94 ppHa.

The population decline in the Mountain and Hill and rural areas continued between 2011 and 2021. Instead, growth was observed in metropolitan cities, sub-metropolitan cities, and municipalities, especially in the selected strategic locations of Tarai, Inner Tarai, and Hill Valleys such as Kathmandu and Pokhara Valleys. The ongoing urbanization is taking a toll on natural resources and the environment, inducing structural changes in land use with diminishing stock of arable land. Housing with reinforced concrete roofing and rental housing are in increasing trend especially in sub-metropolitan and metropolitan cities. However, urban productivity, efficiency and urban rural linkages are increasingly affected by inadequate and limited quality of inter-city and inter-settlement connectivity and local roads. Access to piped water supply lags widely irrespective of provinces, ecological regions, municipality types, and classification of urban space. National grid electricity, which is relatively reliable and has unhindered supply, still tends to lag in many areas of Hill and mountain regions, despite its increasing coverage. Social amenities such as health and school education facilities are limited in municipalities and Gaunpalikas alike and offer only limited-service choices. These infrastructure assets and services are further being strained due to extreme climate events and risks.

Household access to entitlements shows some improved trends. Most households own housing units although rental housing, especially in larger city centres which accounts for a substantial share. Internet ownership has grown significantly between 2011 and 2021, but it tends to be more of an urban phenomenon than peri-urban and rural, with higher ownership confined to sub-metropolitan and metropolitan cities. Family-owned small-scale enterprises (SSE) which are generally informal are limited across urban and rural areas.

Economic variables show some structural shift. The economically active population in urban areas shows increasing occupational reliance on services and to some degree also in manufacturing than subsistence agriculture. Such trends are dominant in sub-metropolitan and metropolitan cities and are further visible in peri-urban areas also. Emerging shifts in industrial sectors from primary to secondary and tertiary are conspicuous only in large urban centres such as metropolitan cities, and sub-metropolitan cities. Similarly, presence of non-government sector (comprising of private sector financial and non-financial corporations) is conspicuous in the metropolitan and sub-metropolitan cities, while municipalities contain more household level institutions.

However, despite creating market opportunities for households, urban areas are not generating adequate formal employment opportunities. A large proportion of self-employed and a small share of employee and employer populations by employment status reveals this. Only metropolitan cities, and to some extent sub-metropolitan cities, appear to be creating more employment opportunities.

Therefore, a combination of factors including lagging infrastructure service conditions, fewer social amenities, and inability to create employment opportunities are seen to be causing populations to migrate from smaller urban centres and rural areas, as revealed by a larger share of households with absentee populations, to larger urban centres including metropolitan cities, sub-metropolitan cities, and selected strategic municipalities. The absentee population consists overwhelmingly of economically productive youth and adults, and a larger proportion of Dalit and Indigenous migrants are seen within this group. This tends to be an emerging trend seen across Nepal's ongoing urban transition.

8.2 Policy implications

The evidence highlights a few pertinent issues for policy considerations. These include revisiting the term 'urban', the creation of employment opportunities, the provisioning and financing for infrastructure services, and embracing climate resilient planning.

Revisiting the term 'urban'

The current definition alone - population size, density, and methods for its measurement is not sufficient to define urban. Such a definition does not reflect its dynamic environment, and the multi-faceted functions it undertakes. The findings of the regression analysis also reveal this. Therefore, urban areas need to be approached from the broader aspects of: (i) population factors (as above); (ii) decent living place; (iii) its ability to create employment opportunities or people engaged in the formal production activities; (iv) provision of physical, social, and economic facilities necessary to undertake urban functions; (v) access to recreational amenities required for the wellbeing of communities; and (vi) resilient integrated planning capabilities which are in place to address climate risks.

Creation of employment and market opportunities

Urbanization and urban development need to be embraced as a catalytic tool for contributing to economic growth and for the creation of employment and market opportunities. A clear trend is seen in the correlation between urban agglomeration, especially in metropolitan and sub-metropolitan areas, and the contribution to increasing prosperity while mitigating poverty.

Careful consideration may also be needed to formulate and integrate economic policies at sub-national level and internalize these in local planning in alignment with national policies. Such consideration may be enacted by approaching a city or municipal cluster which comprises of a strategic city at the core and with adjoining cities, towns, and market centres of the peripheral areas as a holistic urban system than stand-alone city or municipality. This may also demand the creation of necessary policy and institutional environments, reform, and targeted investments.

To ensure effective outcomes of SSEs, examination of the current familial level small-scale enterprises (SSEs) is required, with support provided in organized ways. This may also benefit with strengthening more specialized micro and small medium-scale enterprises (MSMEs). Targeted investment in the MSMEs should emphasize youths and local skills and should be stressed to create the foundation of a local economic base. This further needs to be aligned with the growth potential of the area.

Government's interventions should be strategic and external investment needs to be encouraged and directed to unlock the local and (sub)regional growth potential and comparative advantages. The sectoral investment also needs to be channelled in a coordinated manner for this. Greater efforts are also needed to prioritize strategic interventions to promote urban-rural linkages.

Provisioning and financing of infrastructure services

Institutional and financial support to improve household access to basic entitlements such as housing, piped water systems, internet connectivity, electrification with national grid, and solid waste management (not analysed in the report due to unavailability of disaggregated data at local level) needs to be prioritized. Improved entitlement conditions have a bearing in contributing to economic growth. In housing, the relevance of rental housing to improve accessibility to housing units to new urban entrants and to mitigate the encroachment on government land needs to be examined. The standards and quality of inter-city or inter-settlement connectivity require careful examination and investment. The targeted investment from the government and bilateral and multi-lateral donor partners needs to be pursued. Furthermore, persistent efforts are required to internalize the private sector investment in urban infrastructures and constant efforts are required to create the necessary policy and institutional environment for this.

Climate resilient and inclusive urban planning

Integrated strategic planning at the local level needs to be prioritized and internalized as a catalytic tool of the urban development strategy to guide infrastructure investment and enhance urban productivity and efficiency. This is expected to contribute to realizing environmental, social, and economic sustainability in the long-term. MoLCPA's land use zone map, which shows the hazard-prone areas and developable areas; MoFE's analysis of climate risk at the sub-national level; MoUD's GESI Guidelines, Planning Norms and Standards, and Basic Planning Regulations, and the NSO's disaggregate level caste/ethnic data are some of the basic groundworks which may be relevant to initiate climate resilient and inclusive strategic spatial planning. This may also demand review and improvement in the currently practiced planning method for Integrated Urban Development Plan (IUDP) and Periodic Plan at local level.

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Annex 1: Name of municipalities, years of designations chronology

Municipality	District	Designation Year	Census Year
Aathbis	Dailekh	2017	2021
Aathbiskot	Rukum West	2017	2021
Amargadhi	Dandeldhura	1997	2001, 2011, 2021
Arjundhara	Jhapa	2014	2021
Aurahi	Mahottari	2017	2021
Badimalika	Bajura	2014	2021
Bagchaur	Salyan	2015	2021
Baglung	Baglung	1997	2001, 2011, 2021
Bagmati	Sarlahi	2017	2021
Bahrabise	Sindhupalchok	2017	2021
Bahudarmai	Parsa	2017	2021
Balara	Sarlahi	2017	2021
Balawa	Mahottari	2017	2021
Banepa	Kavrepalanchok	1982	1961, 1991, 2001, 2011, 2021
Bangad Kupinde	Salyan	2017	2021
Banganga	Kapilbastu	2014	2021
Bansgadhi	Bardiya	2014	2021
Barahakshetra	Sunsari	2017	2021
Barahathawa	Sarlahi	2015	2021
Barbardiya	Bardiya	2017	2021
Bardaghat	Nawalparasi West	2014	2021
Bardibas	Mahottari	2014	2021
Baudhimai	Rautahat	2017	2021
Bedkot	Kanchanpur	2015	2021
Belaka	Udayapur	2017	2021
Belauri	Kanchanpur	2014	2021
Belbari	Morang	2014	2021
Belkotgadhi	Nuwakot	2017	2021
Beni	Myagdi	2014	2021
Besishahar	Lamjung	2014	2021
Bhadrapur	Jhapa	1953	1971, 1981, 1991, 2001, 2011, 2021
Bhajani	Kailali	2014	2021
Bhaktapur	Bhaktapur	1953	1952/54, 1991, 2001, 2011, 2021
Bhangaha	Mahottari	2017	2021
Bhanu	Tanahun	2015	2021

Municipality	District	Designation Year	Census Year
Bharatpur	Chitwan	1978	1981, 1991, 2001, 2011, 2021
Bheri	Jajarkot	2015	2021
Bheriganga	Surkhet	2014	2021
Bhimad	Tanahun	2017	2021
Bhimdatta	Kanchanpur	2008	2011, 2021
Bhimeshwor	Dolakha	1997	2001, 2011, 2021
Bhirkot	Syangja	2015	2021
Bhojpur	Bhojpur	2014	2021
Bhumikasthan	Arghakhanchi	2017	2021
Bideha	Dhanusa	2017	2021
Bidur	Nuwakot	1986	1991, 2001, 2011, 2021
Biratnagar	Morang	1953	1952/54, 1961, 1971, 1981, 1991, 2001, 2011, 2021
Birendranagar	Surkhet	1976	1981, 1991, 2001, 2011, 2021
Birgunj	Parsa	1953	1952/54, 1961, 1971, 1981, 1991, 2001, 2011, 2021
Birtamod	Jhapa	2014	2021
Bodebarsain	Saptari	2017	2021
Brindaban	Rautahat	2017	2021
Buddhabhumi	Kapilbastu	2017	2021
Budhanilkantha	Kathmandu	2014	2021
Budhiganga	Bajura	2017	2021
Budhinanda	Bajura	2017	2021
Bungal	Bajhang	2017	2021
Butwal	Rupandehi	1959	1971, 1981, 1991, 2001, 2011, 2021
Byas	Tanahun	1992	2001, 2011, 2021
Chainpur	Sankhuwasabha	2014	2021
Chamunda Bindrasaini	Dailekh	2017	2021
Chandannath	Jumla	2014	2021
Chandragiri	Kathmandu	2014	2021
Chandrapur	Rautahat	2014	2021
Changunarayan	Bhaktapur	2014	2021
Chapakot	Syangja	2014	2021
Chaudandigadhi	Udayapur	2014	2021
Chaurjahari	Rukum West	2015	2021
Chautara Sangachokgadhi	Sindhupalchok	2014	2021

Municipality	District	Designation Year	Census Year
Chhayanath Rara	Mugu	2017	2021
Chhedagad	Jajarkot	2017	2021
Dakneshwori	Saptari	2017	2021
Dakshinkali	Kathmandu	2014	2021
Damak	Jhapa	1982	1991, 2001, 2011, 2021
Dasharathchand	Baitadi	1997	2001, 2011, 2021
Deumai	Ilam	2014	2021
Devchuli	Nawalparasi East	2014	2021
Devdaha	Rupandehi	2014	2021
Dewahi Gonahi	Rautahat	2017	2021
Dhangadhi	Kailali	1976	1981, 1991, 2001, 2011, 2021
Dhangadhimai	Siraha	2015	2021
Dhankuta	Dhankuta	1978	1981, 1991, 2001, 2011, 2021
Dhanusadham	Dhanusa	2014	2021
Dharan	Sunsari	1962	1961, 1971, 1981, 1991, 2001, 2011, 2021
Dharmadevi	Sankhuwasabha	2017	2021
Dhorpatan	Baglung	2017	2021
Dhulikhel	Kavrepalanchok	1986	1991, 2001, 2011, 2021
Dhunibesi	Dhading	2017	2021
Diktel Rupakot Majhuwagadhi	Khotang	2014	2021
Dipayal Silgadhi	Doti	1982	1991, 2001, 2011, 2021
Dodhara Chandani	Kanchanpur	2014	2021
Dudhauli	Sindhuli	2014	2021
Duhabi	Sunsari	2014	2021
Dullu	Dailekh	2014	2021
Gadhimai	Rautahat	2014	2021
Gaindakot	Nawalparasi East	2014	2021
Galkot	Baglung	2017	2021
Galyang	Syangja	2017	2021
Ganeshman Charnath	Dhanusa	2014	2021
Garuda	Rautahat	2014	2021
Gaur	Rautahat	1992	2001, 2011, 2021
Gauradaha	Jhapa	2015	2021
Gauriganga	Kailali	2017	2021
Gaushala	Mahottari	2014	2021
Ghodaghodi	Kailali	2014	2021

Municipality	District	Designation Year	Census Year
Ghorahi	Dang	2008	2011, 2021
Godaita	Sarlahi	2017	2021
Godawari	Kailali	2014	2021
Godawari	Lalitpur	2014	2021
Gokarneshwor	Kathmandu	2014	2021
Golbazar	Siraha	2014	2021
Gorkha	Gorkha	2009	2011, 2021
Gujara	Rautahat	2017	2021
Gulariya	Bardiya	1997	2001, 2011, 2021
Gurbhakot	Surkhet	2015	2021
Halesi Tuwachung	Khotang	2017	2021
Hansapur	Dhanusa	2017	2021
Hanumannagar Kankalini	Saptari	2017	2021
Haripur	Sarlahi	2017	2021
Haripurwa	Sarlahi	2017	2021
Hariwan	Sarlahi	2014	2021
Hetaunda	Makwanpur	1969	1971, 1981, 1991, 2001, 2011, 2021
Ilam	Ilam	1962	1971, 1981, 1991, 2001, 2011, 2021
Inaruwa	Sunsari	1986	1991, 2001, 2011, 2021
Ishnath	Rautahat	2017	2021
Ishworpur	Sarlahi	2014	2021
Itahari	Sunsari	1997	2001, 2011, 2021
Jaimini	Baglung	2017	2021
Jaleshwor	Mahottari	1982	1991, 2001, 2011, 2021
Janakpurdham	Dhanusa	1962	1952/54, 1961, 1971, 1981, 1991, 2001, 2011, 2021
Jayaprithvi	Bajhang	2014	2021
Jeetpursimara	Bara	2017	2021
Jiri	Dolakha	2014	2021
Kabilasi	Sarlahi	2017	2021
Kageshwori Manohara	Kathmandu	2014	2021
Kalaiya	Bara	1982	1991, 2001, 2011, 2021
Kalika	Chitwan	2015	2021
Kalyanpur	Siraha	2017	2021
Kamala	Dhanusa	2017	2021

Municipality	District	Designation Year	Census Year
Kamalamai	Sindhuli	1997	2001, 2011, 2021
Kamalbazar	Achham	2015	2021
Kanchanrup	Saptari	2014	2021
Kankai	Jhapa	2014	2021
Kapilbastu	Kapilbastu	1982	1991, 2001, 2011, 2021
Karjanha	Siraha	2017	2021
Katahariya	Rautahat	2017	2021
Katari	Udayapur	2014	2021
Kathmandu	Kathmandu	1953	1952/54, 1961, 1971, 1981, 1991, 2001, 2011, 2021
Kawasoti	Nawalparasi East	2014	2021
Khadak	Saptari	2017	2021
Khairahani	Chitwan	2014	2021
Khandachakra	Kalikot	2017	2021
Khandbari	Sankhuwasabha	1997	2001, 2011, 2021
Kirtipur	Kathmandu	1997	1952/54, 1961, 2001, 2011, 2021
Kohalpur	Banke	2014	2021
Kolhawi	Bara	2014	2021
Krishnanagar	Kapilbastu	2015	2021
Krishnapur	Kanchanpur	2015	2021
Kshireshwornath	Dhanusa	2014	2021
Kushma	Parbat	2014	2021
Lahan	Siraha	1976	1981, 1991, 2001, 2011, 2021
Lalbandi	Sarlahi	2014	2021
Laligurans	Tehrathum	2015	2021
Lalitpur	Lalitpur	1953	1952/54, 1961, 1971, 1981, 1991, 2001, 2011, 2021
Lamahi	Dang	2014	2021
Lamkichuha	Kailali	2014	2021
Lekbesi	Surkhet	2017	2021
*Lekhnath (Pokhara)	Kaski	1997	2001, 2011
Letang	Morang	2014	2021
Loharpatti	Mahottari	2017	2021
Lumbini Sanskritik	Rupandehi	2014	2021
Madhavnarayan	Rautahat	2017	2021
Madhuban	Bardiya	2014	2021
Madhyabindu	Nawalparasi East	2015	2021
Madhyanepal	Lamjung	2017	2021

Municipality	District	Designation Year	Census Year
Madhyapur Thimi	Bhaktapur	1997	1952/54, 2001, 2011, 2021
Madi	Chitwan	2014	2021
Madi	Sankhuwasabha	2014	2021
Mahagadhimai	Bara	2014	2021
Mahakali	Darchula	2014	2021
Mahalaxmi	Dhankuta	2017	2021
Mahalaxmi	Lalitpur	2014	2021
Maharajgunj	Kapilbastu	2017	2021
*Mahendranagar (Bhimdatta)	Kanchanpur	1977	1981, 1991, 2001
Mai	Ilam	2017	2021
Malangawa	Sarlahi	1986	1952/54, 1961, 1991, 2001, 2011, 2021
Manarasiswa	Mahottari	2017	2021
Mandandeupur	Kavrepalanchok	2017	2021
Mangalsen	Achham	2014	2021
Manthali	Ramechhap	2014	2021
Matihani	Mahottari	2017	1961, 2021
Maulapur	Rautahat	2017	2021
Mechinagar	Jhapa	1997	2001, 2011, 2021
Melamchi	Sindhupalchok	2014	2021
Melauli	Baitadi	2017	2021
Mirchaiya	Siraha	2014	2021
Mithila	Dhanusa	2014	2021
Mithila Bihari	Dhanusa	2017	2021
Musikot	Gulmi	2017	2021
Musikot	Rukum West	2014	2021
Myanglung	Tehrathum	2014	2021
Nagarain	Dhanusa	2017	2021
Nagarjun	Kathmandu	2014	2021
Nalgad	Jajarkot	2017	2021
Namobuddha	Kavrepalanchok	2014	2021
Narayan	Dailekh	1997	2001, 2011, 2021
Nepalgunj	Banke	1962	1952/54, 1961, 1971, 1981, 1991, 2001, 2011, 2021
Nijgadh	Bara	2014	2021
Nilkantha	Dhading	2014	2021
Pachrauta	Bara	2017	2021

Municipality	District	Designation Year	Census Year
Pakhribas	Dhankuta	2014	2021
Palungtar	Gorkha	2014	2021
Panauti	Kavrepalanchok	1997	2001, 2011, 2021
Panchadeval Binayak	Achham	2017	2021
Panchapuri	Surkhet	2017	2021
Panchkhal	Kavrepalanchok	2014	2021
Panchkhapan	Sankhuwasabha	2017	2021
Parashuram	Dandeldhura	2014	2021
Paroha	Rautahat	2017	2021
Parsagadhi	Parsa	2017	2021
Patan	Baitadi	2014	2021
Pathari Shanishchare	Morang	2014	2021
Phalebas	Parbat	2017	2021
Phatuwa Bijayapur	Rautahat	2017	2021
Phidim	Panchthar	2014	2021
Phungling	Taplejung	2014	2021
Pokhara	Kaski	1962	1961, 1971, 1981, 1991, 2001, 2011, 2021
Pokhariya	Parsa	2014	2021
*Prithvinarayan (Gorkha)	Gorkha	1997	2001
Punarbas	Kanchanpur	2014	2021
Purchaudi	Baitadi	2017	2021
Putalibazar	Syangja	1997	2001, 2011, 2021
Pyuthan	Pyuthan	2014	2021
Rainas	Lamjung	2015	2021
Rajapur	Bardiya	2014	2021
Rajbiraj	Saptari	1959	1961, 1971, 1981, 1991, 2001, 2011, 2021
Rajdevi	Rautahat	2014	2021
Rajpur	Rautahat	2014	2021
Ramdhuni	Sunsari	2014	2021
Ramechhap	Ramechhap	2014	2021
Ramgopalpur	Mahottari	2017	2021
Ramgram	Nawalparasi West	1997	2001, 2011, 2021
Rampur	Palpa	2014	2021
Rangeli	Morang	2014	2021

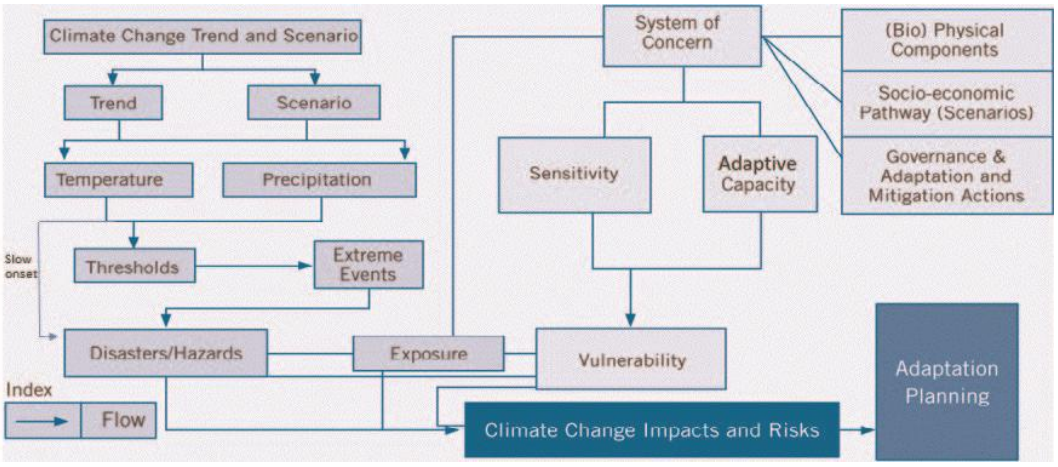
Municipality	District	Designation Year	Census Year
Rapti	Chitwan	2015	2021
Raskot	Kalikot	2017	2021
Ratnanagar	Chitwan	1997	2001, 2011, 2021
Ratuwamai	Morang	2017	2021
Resunga	Gulmi	2014	2021
Rolpa	Rolpa	2014	2021
Sabaila	Dhanusa	2014	2021
Sadananda	Bhojpur	2014	2021
Sainamaina	Rupandehi	2014	2021
Sandhikharka	Arghakhanchi	2014	2021
Sanfebagar	Achham	2014	2021
Saptakoshi	Saptari	2014	2021
Shahidnagar	Dhanusa	2017	2021
Shailyashikhar	Darchula	2017	2021
Shambhunath	Saptari	2014	2021
Shankharapur	Kathmandu	2014	2021
Sharada	Salyan	2014	2021
Shikhar	Doti	2017	2021
Shitganga	Arghakhanchi	2017	2021
Shivaraj	Kapilbastu	2014	2021
Shivasatakshi	Jhapa	2014	2021
Shuklagandaki	Tanahun	2014	2021
Shuklaphanta	Kanchanpur	2014	2021
Siddharthanagar	Rupandehi	1967	1971, 1981, 1991, 2001, 2011, 2021
Siddhicharan	Okhaldhunga	2014	2021
Simraungadh	Bara	2014	2021
Siraha	Siraha	1997	2001, 2011, 2021
Solududhkunda	Solukhumbu	2014	2021
Sukhipur	Siraha	2015	2021
Sunbarsi	Morang	2017	2021
Sundarbazar	Lamjung	2014	2021
Sundarharaincha	Morang	2017	2021
Sunwal	Nawalparasi West	2014	2021
Surunga	Saptari	2017	2021
Suryabinayak	Bhaktapur	2014	2021
Suryodaya	Ilam	2014	2021

Municipality	District	Designation Year	Census Year
Swargadwari	Pyuthan	2017	2021
Tansen	Palpa	1957	1961, 1971, 1981, 1991, 2001, 2011, 2021
Tarakeshwor	Kathmandu	2014	2021
Thaha	Makwanpur	2014	2021
Thakurbaba	Bardiya	2017	2021
Thulibheri	Dolpa	2017	2021
Tikapur	Kailali	1997	2001, 2011, 2021
Tilagupha	Kalikot	2017	2021
Tilottama	Rupandehi	2014	2021
Tokha	Kathmandu	2014	2021
*Tribhuvannagar (Ghorahi)	Dang	1978	1981, 1991, 2001,
Tripurasundari	Dolpa	2017	2021
Triveni	Bajura	2017	2021
Triyuga	Udayapur	1997	2001, 2011, 2021
Tulsipur	Dang	1992	2001, 2011, 2021
Urlabari	Morang	2014	2021
Waling	Syangja	1997	2001, 2011, 2021

Annex 2: Composite vulnerability index

Definition (according to IPCC)**:**
Exposure: exposure is defined as the presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected by climate induced hazards or climate extreme events.
Sensitivity: The exposed units' physical, biological, socioeconomic, and structural characteristics differentiate susceptibility to harm due the hazards, referred to as sensitivity.
Adaptative Capacity: The adaptive capacity is assessed based on the ability of systems, institutions, humans, and other organisms to cope with or adapt to potential damage, capitalize on opportunities, or respond to the consequences of climate change.
Hazard: Potential occurrence climate related physical (extreme) event or trend or impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources.
Vulnerability is a function of **Sensitivity** and **Adaptive Capacity**.
Risk is a function of **Hazard Intensity, Exposure, and Vulnerability**.

Figure below illustrates a typical process and analysis of the chain of vulnerability and risk with the indicator-wise data of sensitivity, adaptive capacity, and exposure.



***Source**: MoFE. (2021). Vulnerability and Risk Assessment and Identifying Adaptation Options in Rural and Urban Settlements. Ministry of Forests and Environment, Government of Nepal. Kathmandu, Nepal. Including the data used below*

Annex 3: Urbanity correlation matrix

3.1 Correlation matrix of explanatory variables used in regression (deg_urb)

Correlation	dpndnc_ratio	s_rent_hh	s_roof_rcc	s_dwater_in	sp_agri_land	no_school1	no_helth_ins	emp_nagri	building_ha	floor3plus	year0_9	p_fm_lnd_hus	sp_sse	sp_absent	sp_crop_land	sensitivity	adaptivility	vulnrability
dpndnc_ratio	1																	
s_rent_hh	-0.50	1																
s_roof_rcc	-0.32	0.59	1															
s_dwater_in	-0.32	0.32	0.05	1														
sp_agri_land	0.16	-0.10	0.38	-0.33	1													
no_school1	-0.17	0.33	0.19	0.10	-0.12	1												
no_helth_ins	-0.19	0.41	0.25	0.10	-0.06	0.45	1											
emp_nagri	-0.34	0.67	0.75	0.09	0.33	0.15	0.27	1										
building_ha	-0.15	0.28	0.21	0.05	0.01	0.02	0.14	0.24	1									
floor3plus	-0.04	0.34	-0.05	0.16	-0.37	0.15	0.23	0.01	0.14	1								
year0_9	-0.16	-0.05	0.15	-0.07	0.09	-0.05	-0.08	0.04	-0.06	-0.28	1							
p_fm_lnd_hus	-0.39	0.34	0.47	0.07	0.38	0.07	0.11	0.50	0.06	-0.18	0.07	1						
sp_sse	-0.09	0.07	0.07	-0.03	0.03	-0.04	0.05	0.13	0.05	-0.03	0.00	0.15	1					
sp_absent	0.11	-0.03	-0.02	0.01	0.01	0.09	-0.04	-0.11	-0.04	-0.08	-0.27	0.12	-0.10	1				
sp_crop_land	0.20	-0.19	0.21	-0.27	0.41	-0.17	-0.22	0.12	-0.12	-0.23	0.22	0.07	0.01	-0.15	1			
sensitivity	-0.22	0.18	0.13	0.12	-0.14	0.19	0.07	0.07	0.05	0.05	0.10	0.12	-0.12	0.15	-0.08	1		
adaptivility	-0.44	0.29	0.16	0.26	-0.09	0.27	0.21	0.17	0.15	-0.05	0.04	0.21	-0.03	0.03	-0.21	0.16	1	
vulnrability	0.31	-0.31	-0.42	-0.03	-0.30	-0.09	-0.14	-0.47	-0.13	0.12	-0.01	-0.44	-0.14	0.01	-0.08	0.18	-0.37	1

3.2 Correlation of explanatory variables used in regression (urb_share)

Correlation	s_toilet_sw	sp_ocu_manf	floor3plus	s_roof_rcc	sensitivity	s_wash_ac	vulnrability	sp_emp_govt	sp_agri_land	sp_absent_f	dpndnc_ratio	hlth_000pop	sp_crop_land	sp_absent	p_fm_lnd_hus	scnd_health	building_ha	hhsize	sp_trade	int_migrant
s_toilet_sw	1																			
sp_ocu_manf	0.21	1																		
floor3plus	0.38	-0.18	1																	
s_roof_rcc	0.35	0.59	-0.05	1																
sensitivity	0.07	0.11	0.05	0.13	1															
s_wash_ac	0.49	0.43	0.23	0.65	0.11	1														
vulnrability	-0.19	-0.53	0.12	-0.42	0.18	-0.38	1													
sp_emp_govt	0.16	0.05	0.32	0.04	0.08	0.19	-0.07	1												
sp_agri_land	-0.02	0.40	-0.37	0.38	-0.14	0.08	-0.30	-0.32	1											
sp_absent_f	0.24	-0.06	0.39	0.00	0.12	0.25	0.09	0.35	-0.55	1										
dpndnc_ratio	-0.27	-0.33	-0.04	-0.32	-0.22	-0.42	0.31	-0.23	0.16	-0.28	1									
hlth_000pop	0.04	-0.19	0.16	-0.16	-0.15	0.04	0.08	0.43	-0.28	0.26	-0.10	1								
sp_crop_land	-0.19	0.23	-0.23	0.21	-0.08	-0.05	-0.08	-0.29	0.41	-0.24	0.20	-0.22	1							
sp_absent	-0.05	-0.16	-0.08	-0.02	0.15	-0.06	0.01	-0.10	0.01	-0.13	0.11	-0.10	-0.15	1						
p_fm_lnd_hus	0.10	0.48	-0.18	0.47	0.12	0.37	-0.44	0.03	0.38	-0.22	-0.39	-0.10	0.07	0.12	1					
scnd_health	0.39	0.10	0.20	0.25	0.06	0.40	-0.15	0.08	-0.04	0.15	-0.18	0.14	-0.19	-0.04	0.12	1				
building_ha	0.30	0.12	0.14	0.21	0.05	0.31	-0.13	0.07	0.01	0.10	-0.15	0.04	-0.12	-0.04	0.06	0.13	1			
hhsize	-0.13	0.13	-0.14	0.11	-0.30	-0.12	-0.01	-0.32	0.45	-0.34	0.57	-0.23	0.39	-0.26	-0.18	-0.09	-0.02	1		
sp_trade	0.04	0.18	-0.03	0.26	-0.04	0.09	-0.09	-0.07	0.34	-0.16	0.23	-0.14	0.25	0.03	0.01	0.06	0.07	0.41	1	
int_migrant	0.31	0.49	0.04	0.56	0.21	0.52	-0.45	0.18	0.07	0.17	-0.54	-0.09	-0.01	0.16	0.56	0.23	0.10	-0.35	0.03	1

3.3 Correlation of explanatory variables used in regression (adm_urb)

Correlation	hhsize	dpndnc_ratio	sp_trade	sp_agri_land	s_dwater_in	sp_sse	emp_nagri	int_migrant	hlth_000pop	skul_000pop	vulnrability	building_ha	hhld_bldng	floor3plus	year0_9	sp_crop_land	s_wash_ac	p_fm_lnd_hus
hhsize	1																	
dpndnc_ratio	0.57	1																
sp_trade	0.41	0.23	1															
sp_agri_land	0.45	0.16	0.34	1														
s_dwater_in	-0.37	-0.32	-0.27	-0.33	1													
sp_sse	0.00	-0.09	-0.20	0.03	-0.03	1												
emp_nagri	0.05	-0.34	0.22	0.33	0.09	0.13	1											
int_migrant	-0.35	-0.54	0.03	0.07	0.18	0.06	0.57	1										
hlth_000pop	-0.23	-0.10	-0.14	-0.28	0.14	0.16	-0.07	-0.09	1									
skul_000pop	-0.28	0.03	-0.25	-0.48	0.18	0.02	-0.42	-0.32	0.55	1								
vulnrability	-0.01	0.31	-0.09	-0.30	-0.03	-0.14	-0.47	-0.45	0.08	0.31	1							
building_ha	-0.02	-0.15	0.07	0.01	0.05	0.05	0.24	0.10	0.04	-0.07	-0.13	1						
hhld_bldng	0.04	-0.15	0.24	0.13	0.02	0.08	0.55	0.40	0.05	-0.23	-0.31	0.33	1					
floor3plus	-0.14	-0.04	-0.03	-0.37	0.16	-0.03	0.01	0.04	0.16	0.20	0.12	0.14	0.39	1				
year0_9	-0.10	-0.16	-0.09	0.09	-0.07	0.00	0.04	0.09	-0.13	-0.18	-0.01	-0.06	-0.17	-0.28	1			
sp_crop_land	0.39	0.20	0.25	0.41	-0.27	0.01	0.12	-0.01	-0.22	-0.28	-0.08	-0.12	-0.08	-0.23	0.22	1		
s_wash_ac	-0.12	-0.42	0.09	0.08	0.23	0.05	0.65	0.52	0.04	-0.22	-0.38	0.31	0.57	0.23	0.00	-0.05	1	
p_fm_lnd_hus	-0.18	-0.39	0.01	0.38	0.07	0.15	0.50	0.56	-0.10	-0.34	-0.44	0.06	0.19	-0.18	0.07	0.07	0.37	1

Annex 4: Regression Results on Urbanity

4.1 Regression on degree of urbanization classification at ward level

4.1.1 Summary statistics of the variables

Summary statistics of all the variables used in regression is as given below:

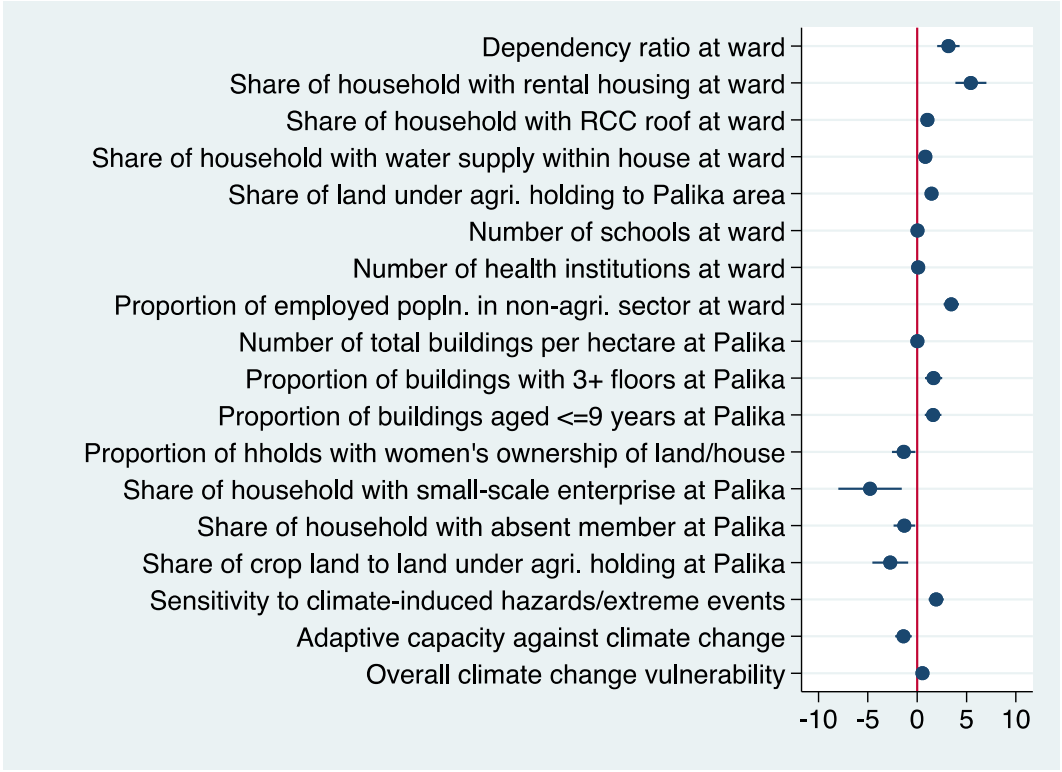
Variable	Obs	Mean	Std. Dev.	Min	Max
deg_urb	6,743	0.14	0.35	0	1
dpndnc_ratio	6,743	0.58	0.13	0.18	1.23
s_rent_hh	6,743	0.06	0.11	0	0.78
s_roof_rcc	6,743	0.24	0.25	0	1
s_dwater_in	6,743	0.33	0.27	0	1
sp_agri_land	6,743	0.31	0.26	0	0.98
no_school1	6,743	5.42	3.32	0	64.00
no_helth_ins	6,743	1.66	3.63	0	119.00
emp_nagri	6,743	0.34	0.22	0.01	0.96
building_ha	6,743	52.60	438.90	0.01	22261.99
floor3plus	6,743	0.12	0.16	0	0.75
year0_9	6,743	0.47	0.15	0.13	0.98
p_fm_lnd_hus	6,743	0.19	0.12	0	0.75
sp_sse	6,743	0.10	0.05	0.02	0.73
sp_absent	6,743	0.23	0.10	0.01	0.54
sp_crop_land	6,743	0.87	0.08	0.32	0.98
sensitivity	6,743	0.57	0.17	0.06	1
adaptivility	6,743	0.50	0.16	0.10	1
vulnrability	6,743	0.44	0.28	0	1

4.1.2 Collinearity Diagnostics

The regression diagnostics including VIF (Variance Inflation Factor) to test the multicollinearity of the explanatory variables is as given below.

Variable	VIF	SQRT VIF	Tolerance	R-Squared
dpndnc_ratio	2.08	1.44	0.4797	0.5203
s_rent_hh	3.78	1.94	0.2645	0.7355
s_roof_rcc	3.13	1.77	0.3196	0.6804
s_dwater_in	1.36	1.17	0.7352	0.2648
s_4wd_vhcl	2.25	1.5	0.445	0.555
no_school1	1.43	1.2	0.6981	0.3019
no_helth_ins	1.51	1.23	0.6644	0.3356
emp_nagri	3.59	1.89	0.2786	0.7214
building_ha	1.16	1.08	0.8651	0.1349
floor3plus	1.72	1.31	0.58	0.42
year0_9	1.6	1.27	0.6244	0.3756
p_fm_lnd_hus	2.02	1.42	0.4954	0.5046
sp_sse	1.1	1.05	0.908	0.092
sp_absent	1.33	1.15	0.7504	0.2496
sp_absent_f	2.13	1.46	0.4695	0.5305
sensitivity	1.33	1.15	0.7499	0.2501
adaptivility	1.71	1.31	0.5838	0.4162
vulnrability	1.85	1.36	0.5419	0.4581
CEE_baseline	1.97	1.4	0.5087	0.4913
sp_agri_land	2.83	1.68	0.3536	0.6464
sp_crop_land	1.54	1.24	0.6473	0.3527
Mean VIF	**1.97**			

4.1.3 Graphical visualizations of regression coefficients



4.2 Regression on share of urbanization (urban population to total) at Local Level

4.2.1 Summary statistics of the variables

Summary statistics of all the variables used in regression is as given below:

Variable	Obs	Mean	Std. Dev.	Min	Max
share_urb	6,743	0.14	0.23	0.00	1
s_toilet_sw	6,743	0.04	0.12	0	0.97
sp_ocu_manf	6,743	0.07	0.05	0	0.26
floor3plus	6,743	0.12	0.16	0	0.75
s_roof_rcc	6,743	0.24	0.25	0	1
sensitivity	6,743	0.57	0.17	0.06	1
s_wash_ac	6,743	0.02	0.05	0	0.67
vulnrability	6,743	0.44	0.28	0	1
sp_emp_govt	6,743	0.03	0.02	0.01	0.24
sp_agri_land	6,743	0.31	0.26	0	0.98
sp_absent_f	6,743	0.16	0.10	0	0.60
dpndnc_ratio	6,743	0.58	0.13	0.18	1.23
hlth_000pop	6,743	0.53	0.74	0	20.00

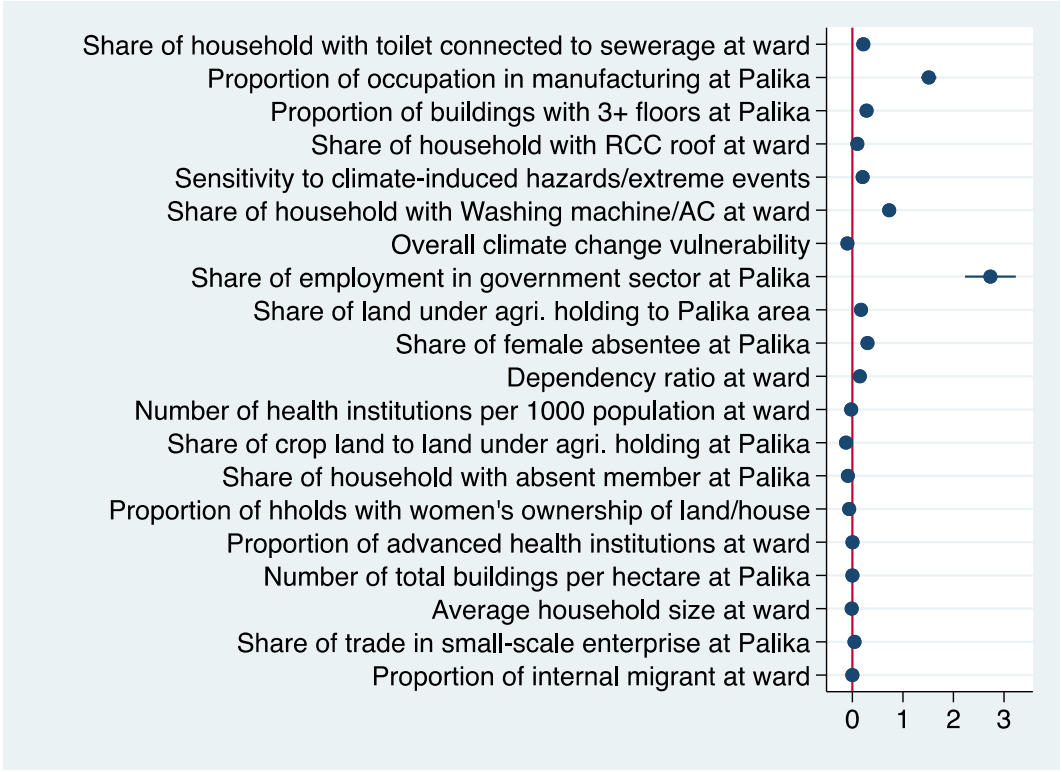
Variable	Obs	Mean	Std. Dev.	Min	Max
sp_crop_land	6,743	0.87	0.08	0.32	0.98
sp_absent	6,743	0.23	0.10	0.01	0.54
p_fm_lnd_hus	6,743	0.19	0.12	0	0.75
scnd_health	6,743	0.41	3.18	0	112.00
building_ha	6,743	52.60	438.90	0.01	22261.99
hhsize	6,743	4.46	0.81	2.00	7.62
sp_trade	6,743	0.47	0.17	0	1.22
int_migrant	6,743	20.80	14.64	0	80.34

4.2.2 Collinearity Diagnostics (Variance Inflation Factor)

The regression diagnostics including VIF (Variance Inflation Factor) to test the multicollinearity of the explanatory variables is as given below.

Variable	VIF	1/VIF
hhsize	3.22	0.310363
s_roof_rcc	2.95	0.338428
int_migrant	2.72	0.367229
dpndnc_ratio	2.7	0.370427
s_wash_ac	2.6	0.383886
sp_agri_land	2.55	0.391541
sp_ocu_manf	2.41	0.415244
p_fm_lnd_hus	2.19	0.455931
sp_absent_f	1.92	0.521425
vulnrability	1.86	0.536772
s_toilet_sw	1.71	0.585417
floor3plus	1.64	0.608118
sp_emp_govt	1.64	0.609886
sp_absent	1.53	0.652621
sp_crop_land	1.52	0.655807
hlth_000pop	1.49	0.669645
sensitivity	1.41	0.707001
sp_trade	1.39	0.720847
scnd_health	1.35	0.7383
building_ha	1.18	0.847752
Mean VIF	**2.0**	

4.2.3 Graphical visualizations of regression coefficients



4.3 Regression on municipality over Gaunpalika

4.3.1 Summary statistics of the variables

Summary statistics of all the variables used in regression is as given below:

Variable	Obs	Mean	Std. Dev.	Min	Max
hhsize	6,743	4.46	0.81	2.00	7.62
dpndnc_ratio	6,743	0.58	0.13	0.18	1.23
sp_trade	6,743	0.47	0.17	0	1.22
sp_agri_land	6,743	0.31	0.26	1	0.98
s_dwater_in	6,743	0.33	0.27	0	1
sp_sse	6,743	0.10	0.05	0.02	0.73
emp_nagri	6,743	0.34	0.22	0.01	0.96
int_migrant	6,743	20.80	14.64	0	80.34
hlth_000pop	6,743	0.53	0.74	0	20.00
skul_000pop	6,743	1.73	1.26	0	24.59

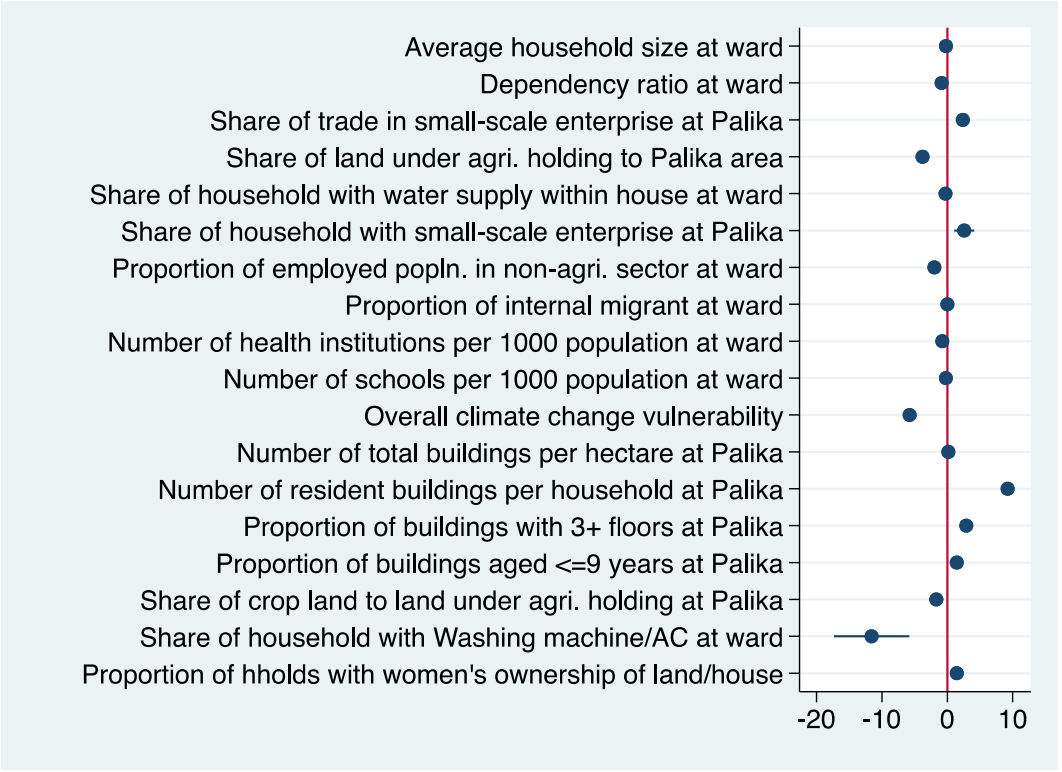
Variable	Obs	Mean	Std. Dev.	Min	Max
vulnrability	6,743	0.44	0.28	0	1
building_ha	6,743	52.60	438.90	0.01	22261.99
hhld_bldng	6,743	1.18	0.18	0.93	2.54
floor3plus	6,743	0.12	0.16	0	0.75
year0_9	6,743	0.47	0.15	0.13	0.98
sp_crop_land	6,743	0.87	0.08	0.32	0.98
s_wash_ac	6,743	0.02	0.05	0	0.67
p_fm_lnd_hus	6,743	0.19	0.12	0	0.75

4.3.2 Collinearity diagnostics (Variance Inflation Factor)

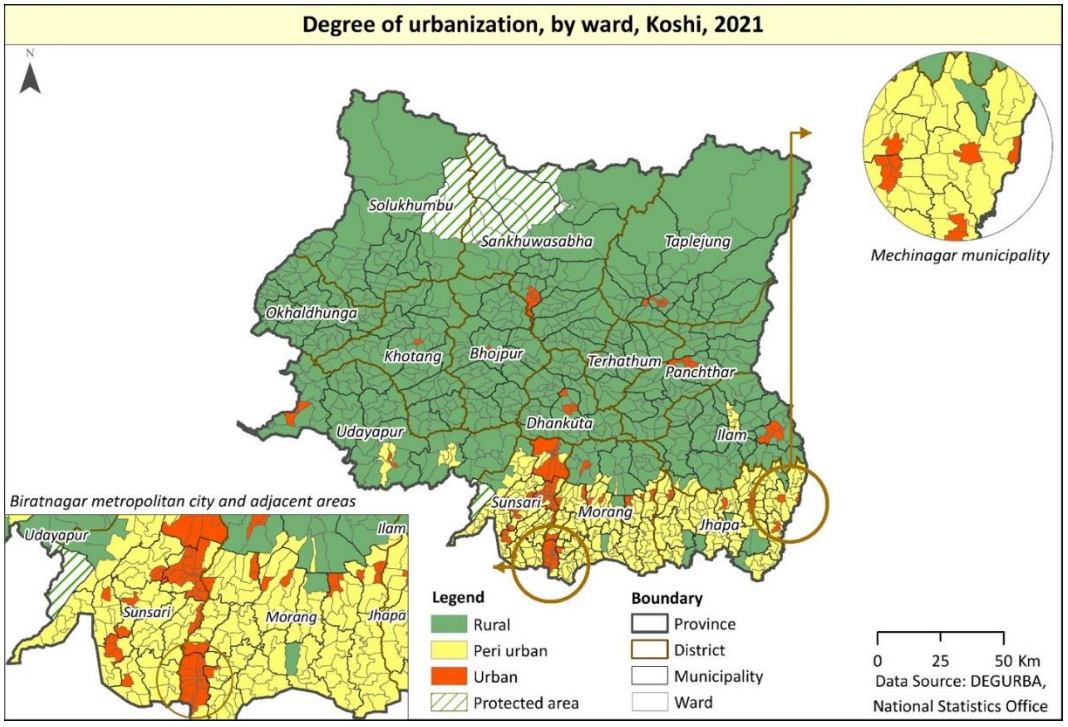
The regression diagnostics including VIF (Variance Inflation Factor) to test the multicollinearity of the explanatory variables is as given below.

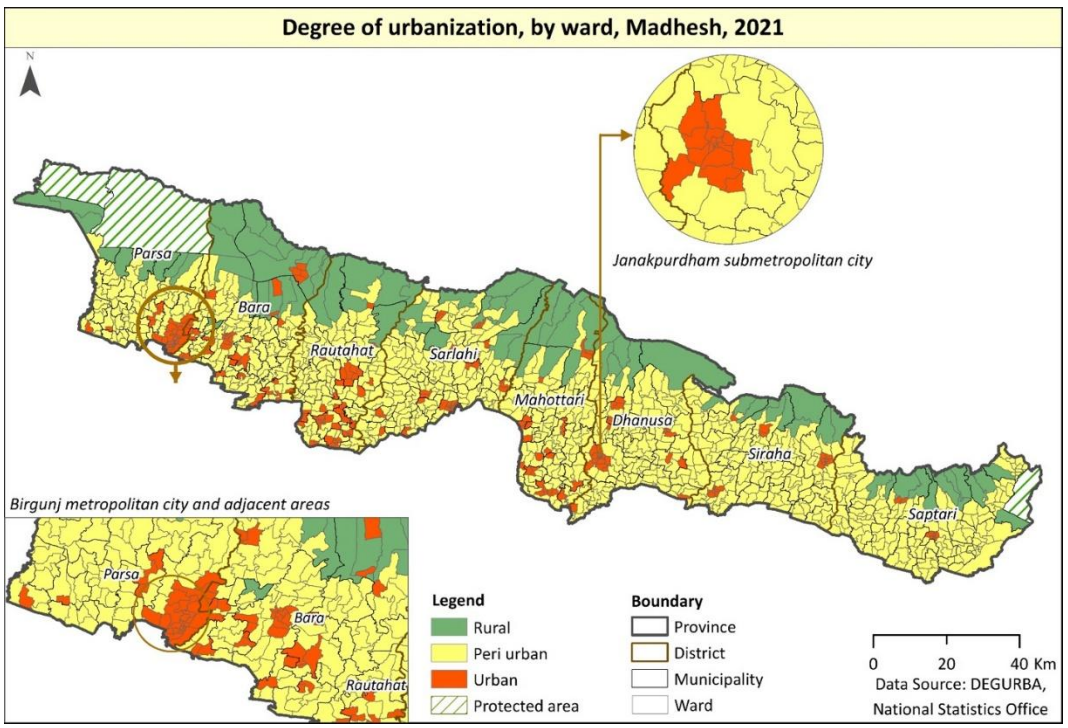
Variable	VIF	SQRT VIF	Tolerance	R-Squared
hhsize	2.59	1.61	0.3857	0.6143
dpndnc_ratio	2.24	1.5	0.446	0.554
sp_trade	1.49	1.22	0.6721	0.3279
sp_agri_land	2.31	1.52	0.4337	0.5663
s_dwater_in	1.37	1.17	0.7317	0.2683
sp_sse	1.17	1.08	0.8559	0.1441
emp_nagri	2.83	1.68	0.3528	0.6472
int_migrant	2.62	1.62	0.3816	0.6184
hlth_000pop	1.6	1.27	0.6246	0.3754
skul_000pop	2.21	1.49	0.4525	0.5475
vulnrability	1.56	1.25	0.6404	0.3596
building_ha	1.19	1.09	0.8376	0.1624
hhld_bldng	2.32	1.52	0.4304	0.5696
floor3plus	1.68	1.3	0.5939	0.4061
year0_9	1.27	1.13	0.7863	0.2137
sp_crop_land	1.47	1.21	0.6821	0.3179
s_wash_ac	2.36	1.54	0.4232	0.5768
p_fm_lnd_hus	2.08	1.44	0.4801	0.5199
Mean VIF	**1.91**			

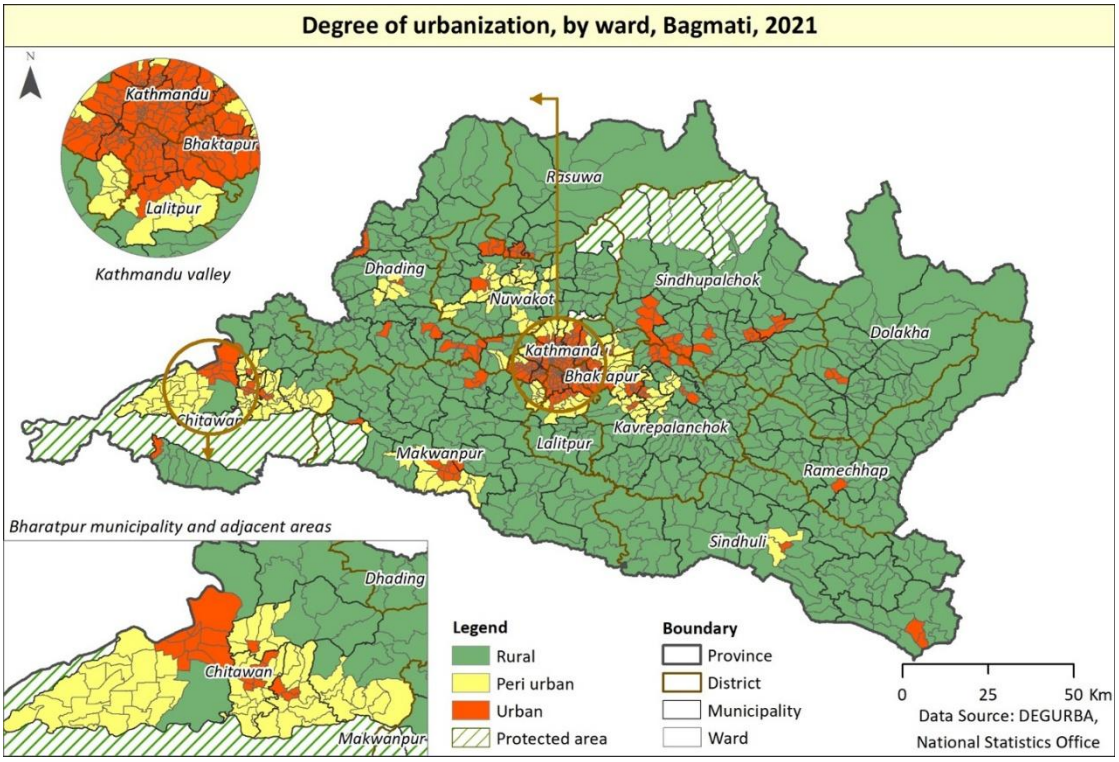
4.3.3 Graphical visualizations of regression coefficients

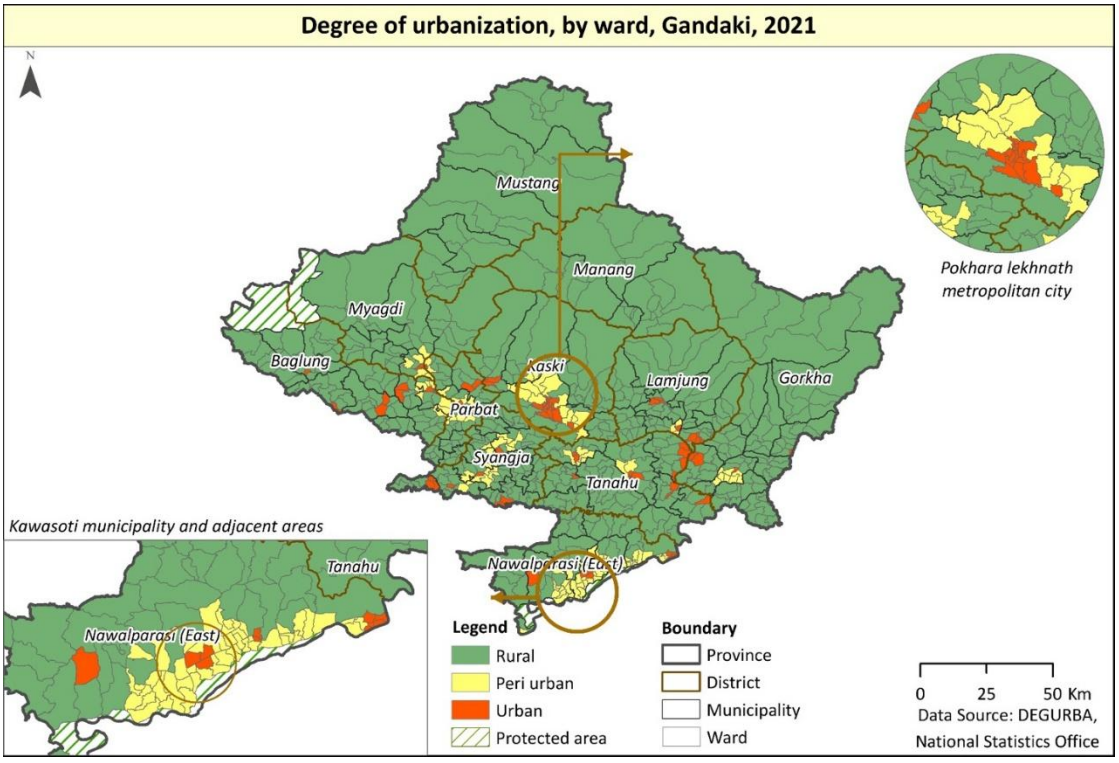


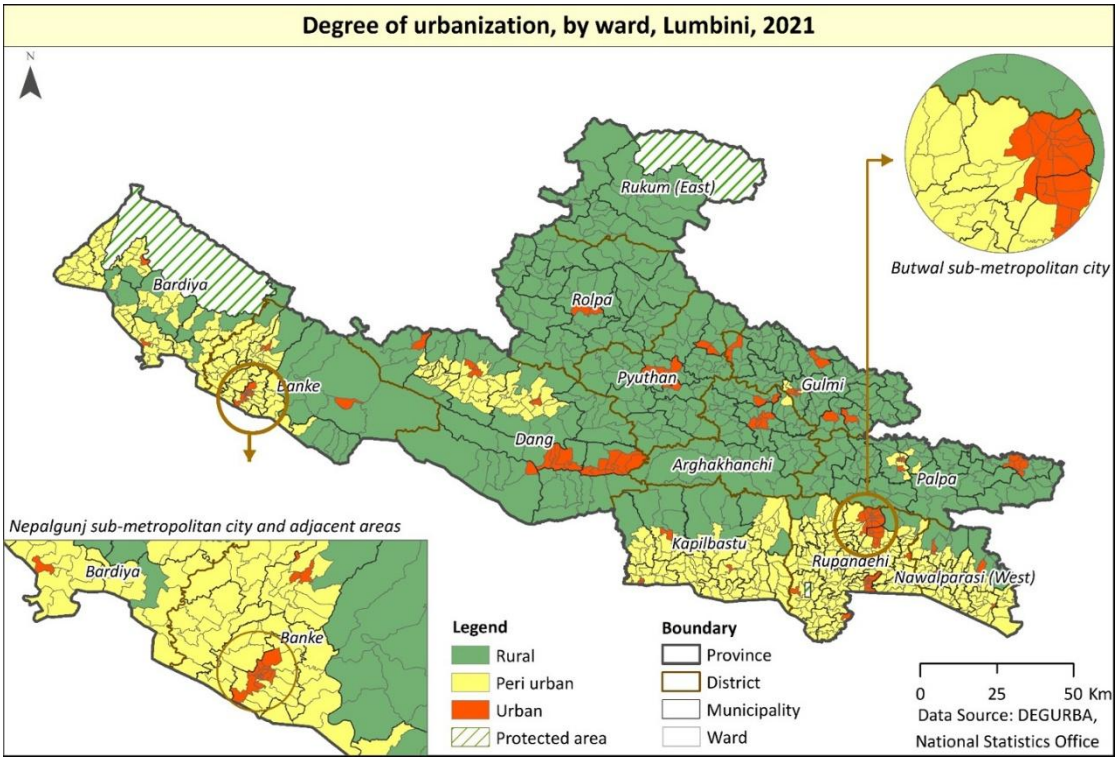
Annex 5: Degree of Urbanization for Provinces (Maps)

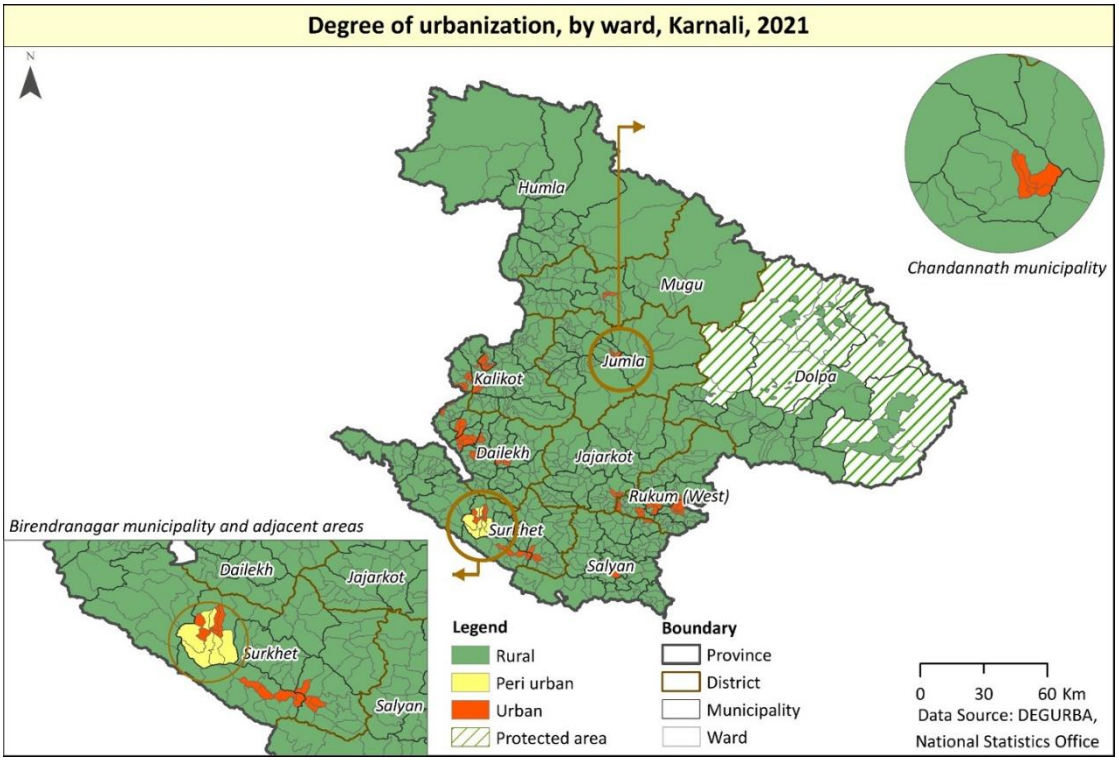


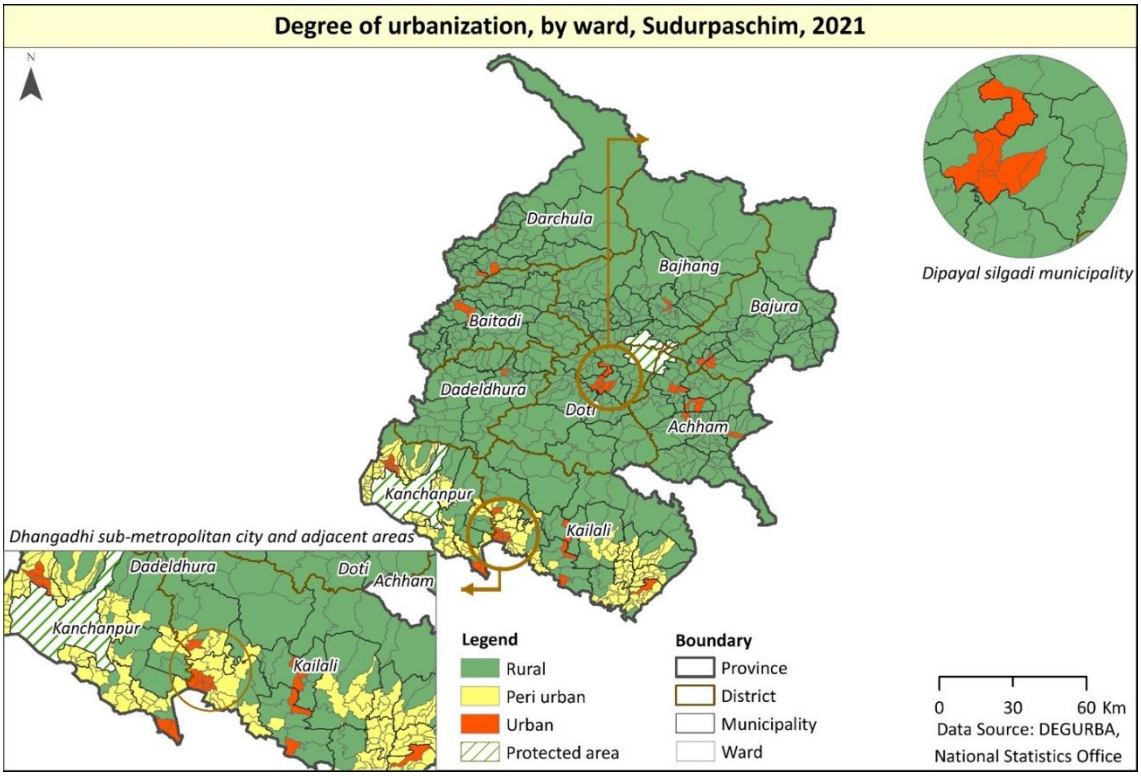



Degree of urbanization, by ward, Bagmati, 2021
N
Kathmandu
Bhaktapur
Lalitpur
Kathmandu valley
Rasuwa
Dhading
Nuwakot
Sindhupalchok
Dolakha
Kathmandu
Bhaktapur
Chitawan
Kavrepalanchok
Lalitpur
Makwanpur
Ramechhap
Sindhuli
Bharatpur municipality and adjacent areas
Dhading
Chitawan
Makwanpur
Legend
Rural
Peri urban
Urban
Protected area
Boundary
Province
District
Municipality
Ward
0
25
50 Km
Data Source: DEGURBA,
National Statistics Office


Degree of urbanization, by ward, Gandaki, 2021
N
Mustang
Manang
Myagdi
Baglung
Kaski
Lamjung
Gorkha
Parbat
Syangja
Tanahu
Nawalparasi (East)
Pokhara lekhnath
metropolitan city
Kawasoti municipality and adjacent areas
Tanahu
Nawalparasi (East)
Legend
Rural
Peri urban
Urban
Protected area
Boundary
Province
District
Municipality
Ward
0
25
50 Km
Data Source: DEGURBA,
National Statistics Office


Degree of urbanization, by ward, Lumbini, 2021
N
Rukum (East)
Bardiya
Rolpa
Banke
Pyuthan
Gulmi
Dang
Arghakhanchi
Palpa
Kapilbastu
Rupandehi
Nawalparasi (West)
Butwal sub-metropolitan city
Nepalgunj sub-metropolitan city and adjacent areas
Bardiya
Banke
Legend
Rural
Peri urban
Urban
Protected area
Boundary
Province
District
Municipality
Ward
0 25 50 Km
Data Source: DEGURBA,
National Statistics Office


Degree of urbanization, by ward, Karnali, 2021
N
Humla
Mugu
Jumla
Kalikot
Dolpa
Dailekh
Jajarkot
Rukum (West)
Surkhet
Salyan
Chandannath municipality
Birendranagar municipality and adjacent areas
Dailekh
Jajarkot
Surkhet
Salyan
Legend
Rural
Peri urban
Urban
Protected area
Boundary
Province
District
Municipality
Ward
0 30 60 Km
Data Source: DEGURBA,
National Statistics Office


Degree of urbanization, by ward, Sudurpaschim, 2021
N
Darchula
Bajhang
Bajura
Baitadi
Dadeldhura
Doti
Achham
Kanchanpur
Kailali
Dipayal silgadi municipality
Dhangadhi sub-metropolitan city and adjacent areas
Dadeldhura
Doti
Achham
Kanchanpur
Kailali
Legend
Rural
Peri urban
Urban
Protected area
Boundary
Province
District
Municipality
Ward
0 30 60 Km
Data Source: DEGURBA,
National Statistics Office

Publisher:

Government of Nepal

Office of the Prime Minister and Council of Ministers

National Statistics Office

Thapathali, Kathmandu

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Fax No.: 977-1-5327720

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ISBN: 978-9937-9888-1-0

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