

## **Urbanization and Its Environmental Impact on Human Beings in Nepal**

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### **Abstract**

Urbanization, marked by population growth and industrial development, has led to significant social, economic, and environmental transformations worldwide, including in Nepal. This study examines the impacts of urbanization on the environment and society in Nepal, with a particular focus on the Kathmandu Valley. It investigates how urbanization impacts human well-being in Nepal through a non-empirical, desk-based approach that reviews sources of secondary data. The rapid and often unplanned urbanization in Nepal, fueled by migration, economic opportunities, and changes in policy, has created both advantages and challenges. While urbanization has driven economic growth and enhanced access to education, healthcare, and various services, it has also resulted in deforestation, loss of biodiversity, air and water pollution, and inadequate waste management, leading to serious public health concerns and environmental decline. The study highlights socio-economic inequality, poor housing conditions, and insufficient infrastructure as major challenges associated with urbanization. The findings underscore the necessity for sustainable urban development strategies, which should include improved urban planning, public health initiatives, and effective environmental management practices. Tackling these challenges is essential for balancing economic growth, environmental protection, and social equity. The study stresses the urgent need to address the negative impacts of urbanization on Nepal's ecosystems and natural resources, providing insights into sustainable urban practices that can inform future policy decisions.

**Keywords:** urbanization, environment, socio-economic impact, sustainable urban development, urban planning, Kathmandu valley, migration

## 1. Introduction

Urbanization is the term used to describe a settlement's overall population growth and level of industrialization. It involves the expansion of both the quantity and size of cities. It represents the migration of individuals from rural to urban areas. The growth in the size and density of urban areas is the cause of urbanization. The population movement from rural to urban regions, the decline in the percentage of people living in rural areas, and the methods in which each culture adjusts to this transition are all considered forms of urbanization. Mitchell defines urbanization as the process of becoming urban, moving to cities, and switching from agriculture to other activities that are common in cities. Urbanization is the process of increasing the percentage of people who live in towns and cities. It happens as a result of people moving from rural side to urban cities.

According to the sociologist, urbanization is the study of the social, political, and economic relationships in cities, and someone who specializes in urban sociology studies those relationships. Emile Durkheim is optimistic about the future of cities and claims that urbanization created a new form of social cohesion based on mutual interdependence, which Durkheim (2020), claims is a typical feature of organic solidarity or cooperative society. As Simmel (2012) states, he observes characteristics of urbanization and the expansion of the modern metropolis that are typical of the larger development and transformation taking place in the modern world, not just of cities. The modern city, Simmel argued, forced people to be cool and uncaring toward one another. It is primarily the process by which cities and towns grow in size as more people start relocating to core locations to live and work. According to the UN's World Urbanization Prospects (2018), the global urban population is indeed expected to grow by 2.5 billion people by 2050, and nearly 90% of this urban growth will take place in Asia and Africa. These regions are experiencing rapid urbanization due to population growth and migration from rural areas to cities. A number of issues, including land insecurity, deteriorating water quality, excessive air pollution, noise pollution, and waste disposal issues, have been brought on by the world's unchecked urbanization. Around the world, cities are expanding more quickly. Urbanization is not just a contemporary phenomenon, it is a historic and swift change of human social roots on a global scale, with villages and cities rapidly replacing each other. Village culture is defined by close ties, shared bloodlines, and collective behavior, while urban culture is defined by distant ties, unfamiliar relationships, and competitive behavior. According to The Nature Conservancy (2008), by 2030, approximately 2 billion people will live in urban areas, making up about 60% of the global population. This rapid urbanization is expected to place immense pressure on the environment, seriously harming ecosystems and depleting natural resources. Urban expansion will lead to significant biodiversity loss, increased demand for freshwater, and higher levels of greenhouse gas emissions. Furthermore, cities will likely account for nearly 70% of global energy consumption and 75% of carbon emissions, amplifying the challenges of climate change and environmental sustainability.

This study examined the consequences of urbanization and development on society and the environment, specifically on air and water pollution. Environmentalists are deeply concerned about the scarcity of natural resources and the numerous environmental crises. Lastly, it has been demonstrated that environmental management is typically thought to require an understanding of environmental challenges. Cities' ecological and environmental footprints

expand along with their population, size, and density. Degradation and landscape fragmentation result from urban expansion that occurs in wetlands, forests, and agricultural systems. Pollution of the air, water, and soil is also a result of urban lifestyles, which are often consumptive, demand a lot of natural resources, and produce a growing amount of garbage. A worldwide phenomenon, urbanization has had a profound impact on human society and the environment. Nepal's urban population grew at an annual pace of 4.4% between 2010 and 2020, reflecting the country's recent acceleration of urbanization. Urbanization has had both positive and negative effects on Nepal's environment and people. On positive aspects, urbanization has helped the country's economy grow and develop, with urban centers acting as growth engines. Urban areas also offer access to jobs, healthcare, and education, which improves living standards and reduces poverty (National Planning Commission, 2016). On the adverse side, urbanization has had negative effects on Nepal's environment and people, including deforestation, biodiversity loss, air and water pollution, and social problems like overcrowding and substandard housing.

### **1.1 Urbanization in Nepal**

Nepal's first official census took place in 1952–1954. There have been data on urbanization since then. The study of urban areas in Nepal is sometimes complicated by the frequent changes in definitions and urban political territories, as well as the addition of new ones (Basyal and Khanal, 2001; Sharma, 2003). The regional development strategy was adopted in the 1970s, and a number of growth centers and north-south growth corridors were identified to focus development efforts in order to achieve full economic development and promote economic agglomeration, which subsequently contributed significantly to urbanization (Shrestha et al., 1986; HMGN, 1991; IUCN, 1999; Pradhan and Perera, 2005). Nepal is among the least urbanized nations in the world, with about 14% of its population living in cities (Pradhan, 2004). Natural growth, migration, the creation of new municipal towns, and the extension of existing municipal towns that combine rural regions are the main causes of the high rate of urban population growth (Pradhan, 2004). The country's largest populated metropolitan area is Kathmandu (Thapa et al., 2008). At various points throughout time, the area has experienced population increases. Over the past 50 years, the urban population has grown from 196,777 to 995,966 (Sharma, 2003). In the 1990s, there was an extremely high growth. Thirty-one percent of the nation's urban population recently lived in Kathmandu. There is now less agricultural area in the Kathmandu Valley due to population growth, and new farming methods have been introduced. Farmers in the valley are shifting from traditional (low value crops) to new (high value crops) as a result of rapid urbanization and the introduction of modern agricultural technologies (Shrestha, 2006; Haack and Khatiwada, 2007). Up until 1990, the city was confined to the ring road, which is nearly as long as Tokyo's Yamanote Rail Line (Kobayashi, 2006). Additionally, because of the ring road's proximity to business districts and the fact that people were relocating out from the congested urban center, urbanization was limited to this area. Throughout the 1980s and 1990s, Kathmandu's urban expansion tended to be north-south. This was mostly because the international airport hindered growth to the east, while much of the readily available land had already been used and the terrain bordering on the west was undulating and challenging to develop (ICIMOD, 2007). Low-density ribbon development had been occupying the area between Bhaktapur and Kathmandu (Thapa and

Murayama, 2008a). Until now, this process has persisted. People from all around the nation have been drawn to Kathmandu by its chances and difficulties. Its success has been aided by the inflow of wealthy and skilled individuals, which has made it the most competitive city in the nation (Thapa et al., 2008). Over the past few years, political unrest and rural unemployment have led to a notable rise in migration to the valley from other parts of Nepal. The valley's population has grown significantly as a result of this migration and natural population expansion (Haack and Rafter, 2006).

### **1.2 Statement of Problem**

Urbanization has many advantages, including economic development and improved access to education, health care and other services, but also significant challenges. Urbanization in Nepal has been quite fast and uncontrolled, leading to serious practice of environmental degradation like poor water quality, air and noise pollution, poor waste disposal practice and poor sanitation. Such problems underpin declines in public health and housing adequacy, as well as social inequities. Urban encroachment into forests, wetlands, and agricultural lands has caused habitat destruction, biodiversity loss, and fragmentation of ecosystems from flooding to deforestation to soil erosion, the growing ecological footprint of cities only adds to our environmental crises. Additionally, this has put pressure on natural resources and urban infrastructure, which are often unable to handle such rapid population growth and leaves many at a lower standard of living while also more exposed to natural hazards. If these challenges remain unaddressed, they could potentially disrupt sustainable development and ecological harmony in Nepal, which could in the long run, have adverse effects on human well-being and the environment.

### **1.3 Objectives of the Study**

- i. To determine the social and environmental effects of urbanization in Nepal and comprehend the underlying causes of these effects.
- ii. To investigate how urbanization affects people's health and well-being in Nepal, considering problems with socioeconomic inequality, poor housing, and pollution of the air and water.
- iii. To investigate sustainable methods for reducing the adverse effects of Nepal's urbanization.

### **1.4 Significance of the study**

Nepal's fast urbanization has resulted in serious environmental damage, biodiversity loss, and public health issues. Urbanization has led to increasing pollution, deforestation, and the loss of natural habitats, all of which have exacerbated environmental issues like climate change. In Nepal, the effects of urbanization on people and the environment are significant for a number of reasons. Initially, it can assist us in better understanding the reasons for urban environmental deterioration and public health issues, as well as in determining practical solutions for these issues. Second, it can assist us in creating sustainable development strategies that strike a balance between social justice, environmental preservation, and economic prosperity.

### **1.5 Scope and Delimitation of the study**

The Kathmandu Valley region is the primary focus of the study on how urbanization affects both the environment and people in Nepal. The study looks at the several environmental issues brought on by this area's fast urbanization, such as deforestation, biodiversity loss, and air and water pollution, as well as the resulting public health issues. The study also identifies possible ways to address these issues, like public health initiatives, sustainable urban design, and biodiversity conservation strategies. The study's primary drawback is that it only looked at one area, and its conclusions might not apply to other parts of Nepal. Moreover, time and budget limitations limit the study's capacity to examine the entire spectrum of environmental and public health issues related to Nepal's fast urbanization. The study will, however, offer insightful information about how urbanization affects people and the environment in the Kathmandu Valley, which will guide future studies and policy initiatives in this field.

## **2. Literature Review**

The research on urbanization in Nepal emphasizes how quickly urban areas are growing and the problems they pose to the environment and public health. Air pollution, which is associated with elevated concentrations of specific matter, nitrogen dioxide, and sulfur dioxide in metropolitan areas, is a major environmental problem. Significant health issues have resulted from this, such as cardiovascular disease and respiratory ailments. Water contamination, which is connected to poor waste management and sanitation procedures in cities, is another environmental problem. This has resulted in several health issues, including water-borne infections. Urbanization in Nepal has been a relatively recent phenomenon compared to its South Asian neighbors, yet it has rapidly transformed the country's socio-economic and environmental landscape. Researchers describe Nepal's urbanization as a dual process driven by migration and administrative reclassification. The country's shift from a predominantly rural to an increasingly urban society has been marked by the creation of new municipalities and the rapid expansion of existing urban centers. The Kathmandu Valley, in particular, has become the epicenter of urbanization, accommodating a large influx of migrants due to its role as the nation's political, cultural, and economic hub (UN-Habitat, 2020). The development of Kathmandu as a primate city has exacerbated the centralization of resources and opportunities, further encouraging rural-urban migration.

Urbanization has contributed to economic growth and improved access to services in cities, but it has also created numerous challenges. Researcher points out that Nepal's urbanization process lacks adequate planning and regulation, resulting in unplanned settlements, insufficient infrastructure, and environmental degradation. Rapid urban expansion has outpaced the capacity of local governments to provide basic amenities, leading to issues such as traffic congestion, air pollution, and waste management crises.

### **2.1 Causes of Urbanization in Nepal**

The urbanization of Nepal is driven by several interconnected factors. Economic opportunities play a central role, as urban centers offer better employment prospects in industries such as trade, tourism, and services. Education is another significant driver, with urban areas providing greater access to schools, colleges, and universities. Migration from rural

areas to cities, particularly Kathmandu, is often motivated by the search for better living standards, healthcare, and opportunities for personal advancement.

Policy decisions have also contributed to urbanization. The restructuring of Nepal into federal provinces in 2015 included the reclassification of many rural areas as urban municipalities, artificially inflating urban population statistics without corresponding improvements in infrastructure or services. This policy, while aiming to promote development, has also intensified challenges such as urban sprawl and resource mismanagement. Natural disasters, such as the 2015 earthquake, have further accelerated migration to urban areas, as many displaced families sought stability and opportunities in cities (Thapa & Murayama, 2009).

## **2.2 Patterns of Urbanization in Nepal**

Urbanization in Nepal has undergone significant transformations over the decades. During the 1970s and 1980s, urban growth was relatively slow, confined to the expansion of Kathmandu Valley and a few regional centers. However, the urban population growth rate in Nepal almost doubled from 3.6% in 1991 to 6.5% in 2001, and the number of urban centers increased from 58 in 2013 to 293 in 2017 (Timsina *et al.*, 2020). Between 2010 and 2020, the urban population grew at an average annual rate of 4.4%, outpacing the global average and reflecting the rapid pace of urban transformation in Nepal (UN-Habitat, 2020).

In the Kathmandu Valley, urban sprawl has been particularly pronounced. Thapa and Murayama, (2009) highlight that built-up areas have expanded at the expense of agricultural land and green spaces. The valley, which once consisted of small, scattered settlements, has now become a continuous urban agglomeration with high population density. While this growth has brought economic opportunities, it has also created significant challenges in managing infrastructure, housing, and public services.

## **2.3 Environmental Consequences of Urbanization in Nepal**

The environmental consequences of urbanization in Nepal are particularly severe in the Kathmandu Valley, which has borne the brunt of unregulated urban expansion. The conversion of agricultural and forested lands into urban areas has resulted in deforestation, loss of biodiversity, and habitat destruction. This has disrupted local ecosystems and reduced the valley's capacity to absorb environmental shocks such as floods and landslides. Air pollution is one of the most pressing environmental issues in the Kathmandu Valley. The region frequently experiences hazardous levels of particulate matter (PM<sub>2.5</sub>), caused by vehicle emissions, industrial activity, construction, and burning of waste. Poor air quality has significant health impacts, including respiratory diseases, cardiovascular problems, and reduced life expectancy among residents. Water scarcity and contamination are other critical concerns. The over-extraction of groundwater, coupled with inadequate waste management, has led to a decline in water quality and availability. The improper disposal of solid and liquid waste has polluted rivers like the Bagmati, rendering them unfit for human use and damaging aquatic ecosystems. Urban heat islands have also emerged as a consequence of urbanization in the Kathmandu Valley. Researchers explain that the replacement of green spaces with impervious surfaces such as concrete and asphalt has caused localized temperature increases,

exacerbating the impacts of climate change. These environmental changes pose serious risks to human well-being, particularly for vulnerable populations living in informal settlements.

In addition, the valley's growing population and unplanned development have led to frequent flooding during the monsoon season, as the natural drainage systems are overwhelmed by stormwater runoff. Urbanization has not only degraded the natural environment but has also amplified the vulnerability of residents to climate-related hazards.

## **2.4 Sustainable Methods for Reducing the Adverse Effects of Urbanization in Nepal**

To mitigate the adverse effects of urbanization in Nepal, a comprehensive approach integrating sustainable methods is essential. Eco-friendly urban planning plays a crucial role in minimizing environmental degradation by promoting green infrastructure, efficient land use, and compact city designs. Sustainable transportation systems, including the expansion of public transit, cycling lanes, and pedestrian-friendly infrastructure, can significantly reduce traffic congestion and air pollution, fostering a cleaner and more accessible urban environment. Proper waste management and recycling are fundamental in addressing pollution and landfill overuse. Encouraging waste segregation, composting, and the reduction of plastic consumption can contribute to a more sustainable urban ecosystem. Similarly, water conservation and management strategies, such as rainwater harvesting, wastewater recycling, and improved sanitation systems, are essential in addressing water scarcity and preventing excessive groundwater depletion.

Energy efficiency and the promotion of renewable energy sources, including solar, hydro, and wind power, are vital for reducing reliance on fossil fuels. Implementing energy efficient buildings and encouraging sustainable industrial practices can further support this transition. Urban green spaces and reforestation efforts also play a significant role in improving air quality and enhancing biodiversity. The creation of parks, rooftop gardens, and large-scale tree-planting initiatives can contribute to a healthier urban environment.

Furthermore, community engagement and effective policy implementation are necessary for long-term sustainability. Raising awareness, enforcing environmental regulations, and involving local communities in sustainable urban development can ensure that policies are effectively implemented. By integrating these methods, Nepal can work toward a more sustainable urban future, balancing development with environmental conservation and improving the overall quality of life for its urban population.

## **3. Materials and Methods**

This study attempted to understand environmental impacts of urbanization and human beings in Nepal with a non-empirical-analytical approach and Desk-based research. It combined large review of secondary data to explore urbanization & environmental changes and their implications on human well-being. A variety of secondary data sources are used for the present study such as peer reviewed journal articles, and government reports was used for the present study. News Articles and Editorials on Urbanization with focus to environmental matters in the country provided the data. This research employed a content analysis, the reviewed literatures and data collected and then searched for certain patterns and flare-ups regarding the negative impacts of urbanization on environment. It was validated by focusing on the urban context of the Kathmandu Valley, analyzing its unique environmental challenges

and urbanization patterns without comparing it to other urban centers in Nepal. As academic research was based on desk methodology, the work itself was constrained by analysis of existing data that might not foster a new insight or in real time. However, it provided a comprehensive literature review and gave good grasp on the subject matter. Ethical considerations were expected through literature review properly attributed all sources and academic integrity requirements are followed.

#### 4. Analysis and interpretation of Data

The findings are based on information obtained from published articles, reports, books, and other relevant documents. This chapter describes the results and discussion of the final data.

**Table 1:** *Trends of Urbanization in Nepal 1952/54 - 2021*

SN	Year	Number of Urban centers	Urban Population%	Average Annual Urban Growth%
1	1952/54	10	2.9	N/A
2	1961	16	3.6	1.65
3	1971	16	4	3.23
4	1981	23	6.4	7.55
5	1991	33	9.2	5.89
6	2001	58	13.9	6.65
7	2011	58	17.1	4.9
8	2014	130	27.2	8.0
9	2021	293	66.2	N/A

**Source:** CBS, 2014

Urban population data were gathered during the 1952–1954 census year. The urban population's growth rate over time is displayed in the above table. The first census to gather data on urbanization, conducted in 1952–1954, found that there were 10 urban areas with 2.9 percent of the population living in urban areas. In 1961 and 1971, there were sixteen total urban areas, with 3.6 and 4 percent of the population, respectively. The urban growth rate was 3.23 percent annually, which was higher than the rate of population growth in the country. The urban population's time series demonstrates its steady increase over time. With 58 urban areas and a 17.1% urban population, there was a 6.65% annual urban growth rate by 2011. The government announced 72 additional municipalities in 2014, bringing the total number of urban areas to 130, with 27.2% of the population living in urban areas. The year 2014 saw the highest yearly growth rate of urban areas, at 8%. The government's political choice to expand urban areas throughout the course of the next years significantly raised Nepal's urban population and number of urban centers. Notwithstanding the state's reclassification through 2021, Nepal currently lacked the urban amenities outlined in the Local Government Operational Act of 2017 despite having 293 urban areas with 66.2% of the population living in urban regions.



**Table 2: Urban Growth in Nepal: Number of Towns, Population, and Growth**

Census Year	Number of Towns	Urban Population in Millions	Percentage of Urban Population	Average Annual Urban Growth Rate in Percentage
1952/54	10	0.238	2.9	-
1961	16	0.336	3.6	1.65
1971	16	0.462	4.1	3.23
1981	23	0.957	6.3	7.55
1991	33	0.1696	9.2	5.89
2001	58	3.28	13.9	6.65
2011	58	4.53	17.0	4.9
2017	263*	26.49	58.4	-

**Source:** CBS, 2014 and 2017

The table two depicts Nepal's urban expansion across a number of decades using data from census years 1952–1954–2017. The table shows the number of towns in Nepal, the average annual rate of urban growth, the percentage of the population living in cities, and the urban population in millions. Just ten towns in all, with a total urban population of 0.238 million people, made up 2.9% of Nepal's total population in 1952–1954. In addition to the number of towns growing throughout time, the chart indicates that the urban population has grown dramatically. By 2017, there were 263 towns and 26.49 million people living in cities, that was 58.4% of the total population of the nation.

The average annual urban growth rate, which displays the annual pace of urban population growth, is also displayed in the table. The 1980s and 1990s saw a notable increase in the urban growth rate, which had been low at first but has since increased. The average annual urban growth rate has been rather steady in recent years, peaking at 7.55% in 1981. All things considered, the table shows that Nepal has seen substantial urbanization over the years, with both the number of towns and the urban population expanding quickly. Nepal's ongoing development and urbanization, the tendency is anticipated to continue in the years to come.

## 5. Conclusion

The environment is affected by urbanization in both beneficial and harmful ways. Although Nepal's urbanization development has been slower than that of other nations in the region, it has nevertheless resulted in a number of environmental issues. The deterioration of air and water quality is one of the main effects of urbanization in Nepal. Energy and water resources become more polluted when cities expand due to the increased demand for these resources. Air pollution, which has detrimental effects on both the environment and human health, has been exacerbated by the expansion of the urban transportation industry.

The loss of biodiversity and natural ecosystems in Nepal is another effect of urbanization. The conversion of woods and other natural areas into urban and industrial land is a result of urbanization. The result has been a decline in ecosystem services and biodiversity, both of which are critical to human welfare. Another effect of urbanization is the growth of informal settlements, which are frequently characterized by subpar living conditions and a dearth of essential utilities like water and sanitary facilities. Due to their usage of non-

sustainable energy sources and inadequate waste management procedures, these settlements exacerbate environmental degradation.

Urbanization has raised living conditions and boosted the economy for many Nepalese, but it has also resulted in a variety of environmental problems. Reducing the adverse effects of urbanization on the environment and public health, as well as guaranteeing sustainable and equitable growth in the nation, will require addressing these issues. In addition, urbanization has brought forth societal problems like congestion, subpar housing, and a rise in crime. The mental and physical well-being of people who live in cities may suffer as a result of these issues. The implementation of sustainable urban planning strategies that put human health and well-being as well as environmental protection first is essential to reducing these effects. In order to lower pollution and safeguard natural resources, this entails making investments in renewable energy, green areas, and public transportation in addition to regulating business and industrial operations.

In general, Nepal has benefited economically and socially from urbanization. To promote sustainable and healthy urban development, it is imperative to acknowledge and address its detrimental effects on both the environment and people.

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