

An appraisal of socio-economic condition of Gangtok, Sikkim

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ABSTRACT

Gangtok, the capital city of Sikkim, represents one of the fastest-growing urban centres in the Eastern Himalayas. Fast urbanization driven by tourism, trade, administrative expansion, and rural-urban migration has significantly transformed the city. The study aims to examine the situation of Gangtok with special reference to the booming population, literacy, occupational structure, infrastructure, and urban challenges. The research is based on both primary and secondary data, where a sample of 260 respondents was selected using purposive and cluster sampling techniques. Statistical and cartographic methods, including percentage analysis, CAGR analysis, choropleth mapping, population density analysis, and graphical representation, were employed for data interpretation. The findings reveal that Gangtok recorded a literacy rate of 100%, while nearly 92% of the working population was engaged in the tertiary sector, illustrating a transition from a traditional agrarian economy to a service-based urban economy. Improvements in healthcare, education, transport, hospitality, tourism and government services have strengthened the local economy, rapid demographic expansion, land scarcity, traffic congestion, water shortages, and inadequate sewerage systems continue to place pressure on the fragile Himalayan environment. The study concludes that sustainable urban planning, environmental conservation, and inclusive infrastructure policies are necessary for ensuring balanced and resilient urban development in Gangtok.

KEY WORDS

Sikkim; Socio-Economic condition; Gangtok town; Population

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Introduction

Urbanization has emerged as one of the most significant processes shaping socio-economic transformation across the world. In developing countries, rapid urban growth has altered demographic structures, economic activities, land-use patterns, and environmental conditions. Mountain cities, particularly those located in ecologically fragile regions, experience unique challenges due to limited land resources, difficult terrain, and increasing population pressure. Gangtok, the capital city of Sikkim, represents a prominent example of such urban transformation in the Eastern Himalayan region [1]. Over the past few decades, the city has witnessed remarkable growth driven by tourism, administrative expansion, commercial development, and migration from rural areas.

Gangtok occupies a strategic position as the political, economic, educational, and cultural centre of Sikkim. The city serves as the primary hub for government administration, trade, transportation, healthcare, and higher education. Its scenic landscape, pleasant climate, and rich cultural heritage have also made it one of the leading tourist destinations in Northeast India. Consequently, the increasing influx of tourists, government employees, business communities, and migrants has accelerated urban expansion and socio-economic development. This growth has significantly improved living standards, literacy levels, employment opportunities, healthcare facilities, communication networks, and infrastructural services.

During the last five decades, substantial portions of forests, agricultural lands, and open spaces surrounding Gangtok have been transformed into residential colonies, commercial establishments, roads, hotels, educational institutions, and other urban infrastructures [2]. Such rapid urbanization has reshaped the physical and socio-economic landscape of the city. While urban growth has contributed to economic prosperity and diversification of occupations, it has also generated considerable pressure on natural resources and public utilities. The increasing demand for housing, transportation, water supply, waste management, and

sanitation services poses serious challenges to sustainable urban development.

The socio-economic structure of Gangtok has undergone a notable transition from a predominantly agrarian economy to a service-oriented urban economy. Tourism, hospitality, trade, education, healthcare, transport services, and government employment now constitute the major sources of livelihood for the urban population. The city has achieved high literacy rates and improved human development indicators, reflecting significant progress in social development [3]. However, rapid population growth and unplanned urban expansion have led to issues such as land scarcity, traffic congestion, environmental degradation, water shortages, and inadequate sewerage systems.

Understanding these changes is essential for formulating effective urban planning strategies and ensuring sustainable development in the Himalayan region. Therefore, the present study aims to appraise the socio-economic condition of Gangtok by examining demographic characteristics, literacy patterns, occupational structure, infrastructure development, and major urban challenges. The study also evaluates the implications of rapid urbanization on the city's environment and quality of life. By analyzing the dynamics of socio-economic transformation, the research seeks to contribute to the development of balanced, inclusive, and environmentally sustainable urban policies for Gangtok and other emerging Himalayan cities.

Materials and Methods

Study Area

Sikkim's capital, Gangtok, is a state in northeast India. It is the biggest city in the state and lies in the Himalayan Mountains. The city is built on hills, with the highest point being about 2480 meters above sea level in the northeast, and the lowest point is about 826 meters in the southwest. It is extended from 27° 17' 39.52" to 27° 22' 19.13" N latitude and 88° 38' 39.27" to 88° 35' 37.39" E longitude [4]. Gangtok is governed by the

Gangtok Municipal Corporation. It covers an area of 19.29 km² and had a population of 1,00,286 people in 2011, as per the national census of the Government of India, 2011 [5].

The city, located between two streams, Rorochu in the east and Ranikhola in the west, covers an area of about 25 km² and lies at an elevation of around 1,800 metres above sea level. Its pleasant climate makes it an important Indian tourist destination. Summer temperatures soar to 30°C, while winter temperatures can drop to around 4°C. July sees maximum rainfall during the monsoon season. Gangtok is the largest urban centre in Sikkim with more than 65% of the total state's urban population. Between 2001 and 2011, the city contributed above 77% of Sikkim's total urban growth, which was mainly involved in the urbanization of the state.

Objectives of the study

To study the status of Gangtok and incorporate it into the larger scenario of the Gangtok Municipal Corporation

The primary objective of this study is to examine the overall socio-economic status of Gangtok and understand its significance within the administrative framework of the Gangtok Municipal Corporation (GMC). The study seeks to analyze demographic growth, economic activities, literacy levels, occupational patterns, and infrastructural development that characterize the city. By placing Gangtok within the broader municipal context, the research aims to evaluate how urban governance, planning initiatives, and municipal services contribute to the city's development and the well-being of its residents.

To explore all the available urban amenities found in the area

Another important objective is to identify and assess the availability, accessibility, and quality of urban amenities and public services in Gangtok. These amenities include educational institutions, healthcare facilities, transportation networks, water supply systems, sanitation services, communication facilities, recreational spaces, markets, and other civic infrastructures. The study examines the extent to which these facilities meet the needs of the growing urban population and contribute to improving the quality of life of the residents.

To compile an overall bird's-eye view of the condition of Gangtok

The study aims to provide a comprehensive overview of the present condition of Gangtok by examining its demographic, social, economic, and infrastructural characteristics. This objective focuses on presenting a holistic picture of the city's development trajectory, highlighting both achievements and areas of concern. Through the analysis of population trends, literacy rates, employment patterns, housing conditions, and urban infrastructure, the study seeks to develop a broad understanding of the city's status and developmental prospects.

To analyse the prevailing problems in the capital town of Gangtok

Rapid urbanization and population growth have created several challenges for Gangtok. Therefore, this study aims to identify and analyze the major problems affecting the city, including traffic congestion, land scarcity, environmental degradation, inadequate waste management, water shortages, sewerage issues, and increasing pressure on public services. Special attention is given to understanding how these challenges impact the socio-economic conditions of residents and the

sustainability of urban development in the fragile Himalayan environment.

To evaluate and suggest probable solutions for the increasing problems in Gangtok and its immediate surroundings

The final objective of the study is to evaluate existing urban management practices and propose practical solutions to address the growing challenges faced by Gangtok and its surrounding areas. Based on the findings, the study recommends measures related to sustainable urban planning, infrastructure improvement, environmental conservation, traffic management, efficient resource utilization, and strengthened municipal governance. These recommendations are intended to support balanced, inclusive, and environmentally sustainable urban development while enhancing the overall quality of life for present and future generations.

Research methodology

The present study adopts a descriptive and analytical research design to examine the socio-economic condition of Gangtok, the capital city of Sikkim. The research seeks to provide a comprehensive understanding of the demographic, economic, social, and infrastructural characteristics of the city and to evaluate the challenges associated with rapid urbanization in a fragile Himalayan environment. To achieve the objectives of the study, both primary and secondary sources of data were utilized. The integration of these two sources enabled a detailed assessment of the existing socio-economic conditions and facilitated a broader understanding of the developmental trends shaping Gangtok's urban landscape.

Primary data was collected through extensive field surveys conducted across different wards of the Gangtok Municipal Corporation. Various data collection techniques, including structured household questionnaires, field observations, personal interviews, and focus group discussions, were employed to gather information directly from residents and stakeholders. The questionnaire survey focused on demographic characteristics, educational attainment, occupational structure, access to urban amenities, housing conditions, public services, and perceptions regarding urban problems. Field observations were undertaken to assess the physical condition of infrastructure, transportation facilities, commercial establishments, and environmental conditions within the study area. Personal interviews with residents, government officials, business owners, and community representatives provided valuable insights into the socio-economic dynamics of the city, while focus group discussions helped in understanding collective perceptions regarding urban development and emerging challenges.

A total of 260 respondents were selected for the study using a combination of cluster sampling, purposive sampling, and convenience sampling techniques. Cluster sampling was employed to ensure representation from different wards and localities within Gangtok Municipal Corporation. Purposive sampling was used to identify respondents possessing relevant knowledge and experience regarding urban development issues, while convenience sampling facilitated the collection of data from accessible respondents during field investigations. This mixed sampling approach ensured adequate representation of diverse socio-economic groups and enhanced the reliability of the findings.

Secondary data were collected from a wide range of published and unpublished sources. These included Census of India reports, District Statistical Handbooks, publications of the

Government of Sikkim, reports of the Gangtok Municipal Corporation, planning documents, economic surveys, academic journals, books, research articles, and other peer-reviewed scholarly sources. Additional information was obtained from official websites and institutional databases to supplement the primary data and provide historical and comparative perspectives on urban growth and socio-economic development in Gangtok.

The collected data were systematically processed, classified, tabulated, and analyzed using various statistical and spatial techniques. Percentage analysis was employed to examine the distribution and composition of socio-economic variables, while Compound Annual Growth Rate (CAGR) analysis was used to assess trends in population growth and urban expansion over time. Population density analysis was conducted to understand the spatial concentration of population within different wards of the city. Comparative ward-level analysis was also undertaken to identify variations in socio-economic characteristics and infrastructural development across the municipal area.

Spatial analysis formed an important component of the study. Choropleth mapping and Geographic Information System (GIS)-based techniques were applied to visualize the spatial distribution of selected socio-economic indicators and urban amenities. These techniques facilitated the identification of spatial disparities and patterns of development within Gangtok. Microsoft Excel was used for data entry, organization, tabulation, and statistical analysis, while GIS software was utilized for thematic mapping and spatial interpretation. Mendeley Reference Manager was employed for the systematic management and organization of bibliographic references and citations.

The results of the analysis were presented through tables, graphs, charts, and thematic maps to ensure clarity and effective interpretation of the findings. The combined use of quantitative and qualitative methods enabled a comprehensive assessment of Gangtok's socio-economic condition, urban infrastructure, and developmental challenges. This methodological framework provided a reliable basis for evaluating the status of the city and for suggesting appropriate measures to promote sustainable, inclusive, and environmentally responsible urban development in Gangtok and its surrounding areas (Figure 1 and 2).

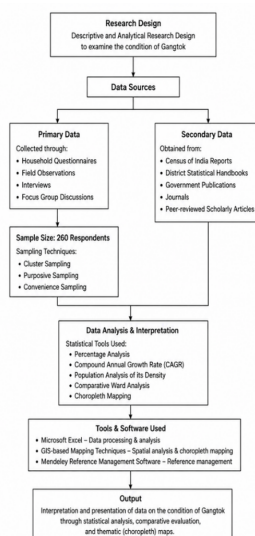


Figure 1. Research methodology framework for analyzing the condition of Gangtok.

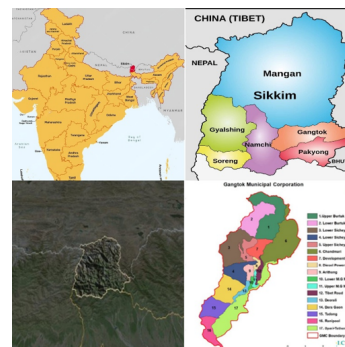


Figure 2. Location Map Showing Gangtok and its different wards

Source. Google Map Department, Government of Sikkim

Source. Urban Development & Housing

Literature Review

Assessment of micro-habitat of woodland diversity in mountainous urban tract of Gangtok Town, Sikkim' Gangtok is the centre of East Sikkim District [1]. Currently, the population is steadily rising in Gangtok, along with limited development in the industrial sector, growing tourism activity, and growth in administrative commercial sector; educational and transportation facilities are responsible for the increasing tendency of people to live in this town.

ESSAYS ON INDIAN ECONOMIC PROBLEMS, Development should be planned in such a way that everyone benefits and protects the environment to mitigate future problems [3]. Population growth has also risen due to expansion of municipal boundaries, making urban development irregular in different areas.

Urban growth and socio-economic transformation in North-East India: Uncontrolled aerial expansion of the city, along with the shortage of basic public services and amenities, results in employment opportunities generated with a regular flow of earnings, improving the standard of living and income level disparities showing unequal access to rising urban opportunities [4].

Urban expansion and land use transformation in Himalayan towns using geospatial techniques [5]. Socio-economic position of the population includes individual perspective on their social class and ranks their earnings along with their level of education, including professional standing. The analysis examines the status of informal entrepreneurs related to social and economic sustainability, measuring their status in the country.

Rooftop farming: A sustainable means to food security for Gangtok city in Sikkim, India [1]. The primary constraint for stabilising sustainable and inclusive holistic growth in Gangtok is a conventional regional disparity. Extensive and traditional development programs aimed at accelerating sustainable growth can also affect significant economic, environmental degradation and socio-cultural disruption.

The Vulnerability of Human Population to Landslide Disaster: A Case Study of Sikkim Himalayas [6]. Gangtok, a rapidly growing hill city, is dependent on a fragile environment and is the largest city of a rural state like Sikkim, with almost half of the population employed in the government sector.

Age of attainment of menarche and factors affecting it amongst schoolgirls of Gangtok, Sikkim, India [8]. The profound growth growth of urbanization has expanded construction

and settlement in various fragile and unstable geological areas, making the city more vulnerable to natural disasters such as landslides, soil erosion, and earthquakes, especially during periods of environmental stress and heavy rainfall, especially during the monsoon.

Green Investments as a Vital Tool to Maintain the Sustainability of Tourist Destination: Gangtok, Sikkim-A Case Study [9]. Gangtok's constantly rising population has become a problem for its economy, burdening infrastructure. To avoid the negative effects on the climate and people, responsible growth management is vital.

Mountain urbanization and environmental sustainability in the Indian Himalayas. Mountain urbanization and environmental sustainability in the Indian Himalayas: Gangtok's exclusive status as a developing tourist destination in the Himalayas means tourism growth and environmental preservation must be carefully balanced [10]. Households involved in tourism and various commercial activities show significantly more earnings than those dependent on other informal labour, showing benefits of uneven distribution of urban development.

Tourism-induced urban transformation in Gangtok and environmental implications [11]. Gangtok, a plastic and litter-free city with disciplined traffic, with lane-driving being the unspoken rule, is facing traffic congestion unlike other metropolitan cities.

Challenges of sustainable urban development in Himalayan hill towns: Evidence from Sikkim. The societal phenomenon in Sikkim is Gangtok-centric, reinforcing the imbalanced urban structure of Gangtok City and its immediate vicinity. The pressure exerted on the surrounding environment of vulnerable and fertile lands is causing rapid land conversion from non - urban to urban.

According to the Urban Transition Theory by Davis, there is a gradual shift from a rural economy to an urban economy reflecting a rise in urban population, increased literacy rates, infrastructural improvement and improved employment in the tertiary sector [12]. However, unemployment, traffic congestion, a rise in land values and migration add more pressure on the environment.

In the context of Peri- Urban Transformation Models by Simon et al., it is visible that there are socio-economic and spatial changes due to urban expansion in Gangtok [13]. There is urban expansion, rural land conversion to commercial, residential and tourism-related uses, development in infrastructure, growth in population and transformation in livelihood patterns, creating

inequalities between long-term residents and new urban settlers.

In line with the Growth Pole Theory by Boudeville, Gangtok's regional development attracts infrastructure, investment, services and migration from various neighbouring regions [6]. Gangtok, serving as an economic and administrative hub, creates a huge spike in education, tourism, government sector and trade. Here, a disparity is seen due to uneven distribution of resources between the urban core and peripheral areas of Gangtok.

In conformity with the Sustainable Urban Development Framework by Campbell, resources are scarce, increased pressure on land, waste management issues, environmental pollution, and a threat to the fragile ecosystem of the mountain [14]. To resolve the issues, resources must be used sustainably; conservation of the environment, judicious planned growth and inclusive policies must be implemented for prolonged resilience and well-being.

In relation to Modernization Theory by Allen, the various sectoral developments in Gangtok comply with modernization, indicating integration of broader economic developmental processes [15]. However, various challenges persist, indicating unequal levels of modernisation across various sections of society.

Table 1. Pattern of population growth in Gangtok

Year	Gangtok	CAGR
1951	2744	
1961	6848	9.58%
1971	13308	6.87%
1981	36747	10.69%
1991	25024	-3.77%
2001	19354	1.61%
2011	100286	13.07%

Source: Census of India 2011, Town Directory 2011

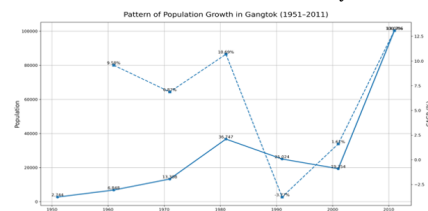


Figure 3. Population Growth of Sikkim (1951-2011)

Source: Census of India 2011, Town Directory 2011

Table 2. Ward-wise population distribution: Gangtok 2011

Name of the ward	Population	Area (sq km.)	Density (persons/sq. Km)	Rank (density)
Burtuk	9957	4.33	2298	13
Lower Sichey	5873	3.04	1934	15
Upper Sichey	7979	0.73	10999	7
Chandmari	6177	2.89	2140	14
Development Area	6723	0.73	9202	8
Diesel Power House	3987	0.17	22940	4
Arithang	8212	0.34	23928	2
Lower M.G Marg	4032	0.12	33049	1
Upper M.G Marg	2664	0.13	20524	5
Tibet Road	3266	0.29	11396	6
Deorali	6938	0.3	23282	3
Daragaon	9605	1.58	6082	10
Tadong	9325	1.24	7503	9

Ranipool	4520	1.02	4448	12
Syari-Tathangchen	11028	2.39	4621	11

Source: Census of India 2011, Town Directory 2011

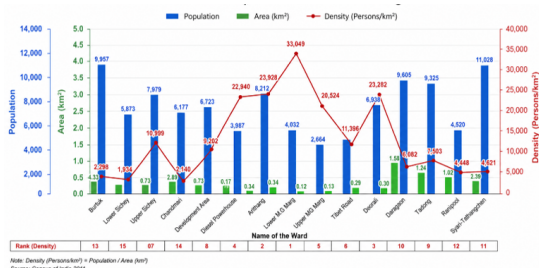


Figure 4. Ward-wise Population Distribution: Gangtok 2011

Source: Census of India 2011, Town Directory 2011

Table 3. Comparing Gangtok with other new urban centres.

City	Literacy (%)	Per Capita Income (₹)	Workforce Participation (%)
Gangtok	82.2	240000	46
Shillong	84.5	210000	43
Aizawl	91.3	225000	45
Kohima	85.2	205000	41

Source: Census of India 2011

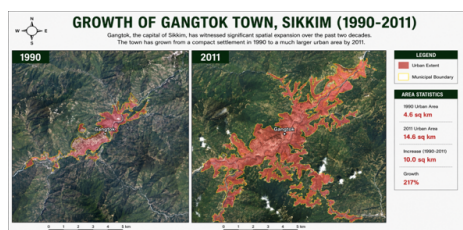


Figure 5. Growth of Gangtok Town, Sikkim (1990-2011)

Source: UD&HD, Gangtok-Sikkim

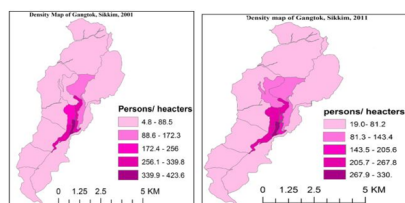


Figure 6. Density Map of Gangtok Town, Sikkim (2001-2011)

Source: UD&HD, Gangtok-Sikkim

Discussion and Interpretation of Findings

Scenario of Gangtok

Sikkim is the state with the least population of 6,10,577 according to the 2011 Indian Census Board. Around 65.3% of this population is urban, with the largest city, Gangtok, home to 1,00,286 people, including 52,459 males and 47,827 females (according to the District Statistical Handbook, Sikkim 2011) [16]. The sex ratio was 912 females per 1000 males, whereas the sex ratio among children was 932 girls per 1000 boys. Gangtok experienced a noticeable population increase between 2001 and 2011, witnessing an increase of 13.07%. In 2001, Gangtok constituted 49% of Sikkim's urban population and accounted for more than 77% of total urbanisation. The total urban population rose significantly from 13,000 in 1971 to over 1 lakh in 2011.

The population density in Gangtok was 5,199 people per km². The city, divided into 15 wards, has the highest population in Syari-Tathangchen (11,028), while the least population is in Burtuk (9,957). Areas such as M.G. Marg and Deorali have maximum population density because of their proximity to the central part of the market, banks, hospitals, etc. (Census of India) [17].

Population and density

Gangtok has a population density of around 5,199 persons per km². The population distribution is uneven in all wards. Central areas such as Development Area, Lower Sichey, Syari and Deorali are very crowded because they have markets, schools, transport facilities, better roads, hospitals, and government offices. Due to easier access to urban services and employment, these areas attract more people. On the contrary, outer wards have a lower density of population due to difficult terrain, poor road connectivity, steep slopes, and poor infrastructure [4,18]. The majority of the population belongs to the age group of 17- 46 years, demonstrating that Gangtok has a large pool of independent working population. Gangtok's hilly landscape restricts horizontal expansion, forcing the city to expand in a congested and irregular fashion.

Migration and cultural diversity

Migration has played a significant role in the urban sectoral growth of Gangtok. Many people from Nepal, West Bengal, Bhutan, Bihar, and other nearby regions have migrated to the city in search of employment, healthcare, better living conditions and proper education. Rural-to-urban migration has expanded profoundly because Gangtok offers more economic opportunities and urban facilities in comparison to rural areas [19]. The city has a diversified culture. The most common spoken language is Nepali, followed by Hindi, English, Tibetan and Lepcha. The major religions followed in the city are Hinduism and Buddhism, while other smaller communities practice Christianity, Islam, and Jainism. Different cultural and ethnic groups reside together, which makes Gangtok socially diverse and multicultural.

Education and literacy

Gangtok has a significantly higher literacy rate of 100%, which is more than many other urban centres in India. This shows that the educational services and facilities are great due to its status as a vital educational and administrative centre in Sikkim. Government institutions and schools have helped to improve literacy by providing textbooks, uniforms, education, scholarships, and other educational support for free for economically weaker students. Gangtok also has important educational institutions such as Sikkim Manipal Institute of Medical Sciences, Sikkim Central University and various other private universities. They attract students and scholars from various parts of India, adding to the region's educational development [20]. While educational facilities have improved, a lot of students face unequal access to quality education, financial difficulties, school dropouts among low-income families, employment crisis or unmatched employment opportunities according to the qualifications and skills of the educated youth, generating a tremendous unsolved gap.

Economy and employment

Gangtok's economy depends mainly on its service sector. About 92% of its working population works in transport, hospitality,

tourism, government services, trade and business activities. Agriculture plays a limited role, employing only around 1% of the population, with tourism as the backbone of its economy. Yearly, thousands of tourists visit for its pleasant climate, natural beauty, cultural attractions, monasteries, and more. Tourism provides large employment opportunities for the locals working in transport services, hospitality, travel businesses and retail. Yet there are extensive variations in income levels [21]. Government employees and service-sector professionals earn good salaries, while migrant workers, staff and labourers earn around ₹10,000 or less per month, showing economic inequality within the population.

Development challenges and opportunities

Rapid urban growth has significantly increased pressure on public services and infrastructure in Gangtok, with water shortage as a major issue. Around 70% of the households depend on PHED water supply, 15% on RDD supply, and 15% on natural springs, yet only 37% of the households receive a continuous water supply. Gangtok faces large-scale problems due to traffic congestion, narrow roads, unplanned construction, waste management and sewerage. Tourism and population have increased the number of vehicles on narrow, hilly roads, leading to traffic problems. The city is dependent on NH10 for transportation, which faces congestion very frequently [22]. Solid waste generation has increased rapidly due to tourism and urban growth. Improper waste disposal and sewage have adversely affected environmental quality in most areas. Construction on steep hilly slopes has greatly increased the risk of landslides, earthquakes and soil erosion. Uncontrolled urban expansion has decreased forest cover greatly and adversely affected sensitive areas.

Limitations of the Study

- Lack of proper city-wide data on the formal and informal economy makes detailed local analysis difficult.
- Limited data made understanding the size, structure, and activities of the informal sector difficult.
- Proper information on interstate and interstate migration was not readily accessible, making the socio-economic study challenging.

Policy Recommendations

- Strengthening entrepreneurship and vocational training programmes for generating employment.
- Supporting Community Based Tourism and Eco-Tourism to protect the environment and generate income.
- Expand employment opportunities, financial support and skill training for women.
- Upgradation of all the necessary basic amenities for the growing population.
- Implementation of conservation of resources, integrating community participation for sustainable urban development.

Conclusion

The Government needs to lay down clear, concrete and effective laws and regulations that will address violations. Awareness initiatives should be scaled within the population so that they can fully benefit from available infrastructure. Local governments must ensure citizens are provided with higher levels of employment opportunities. Additionally, financial support must be lent to new local entrepreneurs facing

challenges. SHGs, NGOs, and financial institutions should address this issue. The Government should also expand plastic recycling machines, or 'reverse vending machines', as installed in metropolitan cities. The authorities concerned should set up composting plants at every colony and village, self-managed by the households, that will uphold decentralised and structured waste management.

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