

# Urban Environmental Challenges and Control in India

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## Abstract

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Industrialization and urbanization are the 2 predominant reasons of pollutants in our towns. A fundamental ecological project in India is land use/land cover change because the city population increases demand for land for lots city sports. Forests want to be reducing down, grasslands plowed and pastured, swamps tired, and farmland forced into increasingly more towns. That is a tough order to make because it reduces green cover, increases fossil gasoline intake, increases soil temperature, produces huge amounts of waste and secures big quantities of barn waste, leading to difficult orders. It's a project. Roads are deteriorating and this is one of the principal reasons of fitness problems. India's on-going populace explosion, along with fast urbanization and industrialization, is placing substantial pressure on infrastructure and natural assets. India's Navya Andhra Pradesh has documented urban slums in Vizag metropolis due to terrible environmental situations and worst geographical conditions. Currently, India is committed to developing and constructing a hundred clever towns to satisfy the demands of its rapidly developing and urbanizing populace. Indian government have determined India's round sensible city to be Visakhapatnam. on this context, this research paper described many environmental challenges and management problems of the smart metropolis idea.

**Keywords:** - Urban Development, Environmental attributes, Globalization, Land use and Land cover etc.,

## 1. Introduction: -

Urbanization and financial boom are two quantifiable trends in latest global records which are most closely associated to traditional 'development'. Like improvement itself, they constitute debatable concepts, and using 'rural' and 'city' to explain distinct forms of human agreement is now a brand new indicator and settlement patterns (Champion and Hugo, 2004). the scale and importance of financial increase also are more and more being questioned. Urbanization and financial growth refer to phenomena that are actually transforming no longer simply city areas and the affluent however humanity and the world we live in. moreover, both tendencies are closely associated with fundamental adjustments in governance. Governance adjustments are even extra difficult to quantify, however they may be on the coronary heart of the demanding situations we face these days.

### 1.1. Urban environmental issues facing India: -

Provide fundamental environmental services in the simplest ways to defend health: get right of entry to to secure ingesting water, sanitation, well-controlled stable waste series and disposal, cleanser cooking fuels. stopping and mitigating the effects of pollutants and degradation, together with decreasing home pollution thru provision, improving home air flow, figuring out and implementing air pollutants, floor water pollution, groundwater pollutants and depletion, land use, and ecosystem degradation an integrated approach to the city environment for city poverty and environmental conditions are connected. This poverty is exacerbated through environmental threats and is a major motive of ailment, premature dying and hard living conditions for people. urban environmental factors have an effect on human fitness, specially within the area of fertility. expertise the effect of urbanization on food systems

### 1.2. Objectives: -

- To look at the prevailing status of urban environment in Visakhapatnam.
- To assess the present Environmental situations of the GVMC city.
- To observe the role of town administration in city surroundings control.

## 2. Review of Literature: -

City improvement is mainly important in the broader context of sustainability. In 2005, the sector's urban population turned into 3.17 billion out of 6.forty five billion (UN-HABITAT, 2007). On modern trends, the wide variety of urban dwellers will preserve to increase and is projected to reach approximately five billion of her eight.1 billion international by 2030 (UNHABITAT, 2007). Because of their excessive population densities and high tiers of financial and social pastime, urban regions are fundamental useful resource customers,

manufacturers of waste and pollution, environmental destroyers and hot spots of social troubles. there's additionally Urbanization is a global phenomenon, however it's miles very dynamic in India, which has been urbanizing at an unheard of fee in the final 30 years. over the last 50 years, India's populace (1.2 billion these days) has extra than doubled, at the same time as its urban populace has almost quintupled. The wide variety of megacities in India will grow from three (Mumbai, Delhi and Kolkata) nowadays to six (including Bangalore, Chennai and Hyderabad) by 2021, making India the largest megacities inside the global. Attention (Chakrabati, 2001). This phenomenon would require advanced techniques, along with space technology, to assist city planners, economists, environmentalists, ecologists, and useful resource managers clear up issues associated with such growth. (Maktav & Erbek, 2005). City planners want facts on the boom fee, styles and volume of city sprawl to offer basic facilities along with water, sanitation and strength. Planners currently lack such information, so maximum city sprawl areas lack fundamental infrastructure. Urban populace growth is as a result of (1) migration to cities, and (2) extra fertility to loss of life in the towns themselves, especially because of high delivery fees in growing international locations. a main reason for city migration is profound structural change, mainly in non-commercial international locations. This structural exchange is the result of (1) monetary commencing, (2) new trading companions, and (3) converting political framework situations. Democratization. city populace increase has many consequences. One in all them is the growth in emissions of air pollution. A examine by way of Mage et al. (1996) factor out that motor automobile traffic is a first-rate contributor to air pollution in huge towns. Diffusion and dilution of air pollution are greatly inspired by means of climate situations; especially wind direction, wind pace, turbulence and atmospheric balance.

### **3. Materials & Methods: -**

#### **3.1. Study area: -**

Visakhapatnam, popularly called Vizag, is a fast developing port city. With a population of in 2021 and a land location of 682 km<sup>2</sup>, Visakhapatnam is the largest metropolis in terms of land and Andhra Pradesh is second biggest urban agglomeration in populace. On account of speedy industrialisation, there was enormous migration into the town. The town become initially a small fishing village but due to its natural harbour it advanced into a primary port. It has experienced rapid industrialisation with the boom of main industries, along with metal, petroleum refining and fertiliser. With the formation of "greater Visakhapatnam" in 2005 the city's development is about for a quantum bounce. The growth of population turned into greater than eighty% all through 1971-eighty one and 37.eleven% at some point of 1991-2001. Due to formation of GVMC and merger of surrounding villages, several well mounted city components of the metropolis are positioned in the GVMC. The information of populace of the Municipal company Visakhapatnam and now functioning because the more Visakhapatnam Municipal organisation are given approximately one 1/3 of population of extra Visakhapatnam Municipal corporations are living in slums, squatters and different bad settlements. Their contribution to town's financial system has also been developing over the duration. inside the absence of advanced land and clean policy to deal with their issues, the bad suffer from many inadequacies in phrases of get admission to to basic offerings and socio-monetary needs. The distribution of slums is scattered all over the town however major awareness is found in older components of the city and also closer to industrial establishments.

#### **3.2. Methodology: -**

We acquire the information overall 07 city slums inside the city with purposive sampling approach. And we collect the statistics from Andhra Pradesh pollution control board (APPCB), greater Visakha Municipal Corporation, and Visakha city development and a few other district statistical hand books additionally. Depend on the secondary statistics from net. Numerous reputed journals.

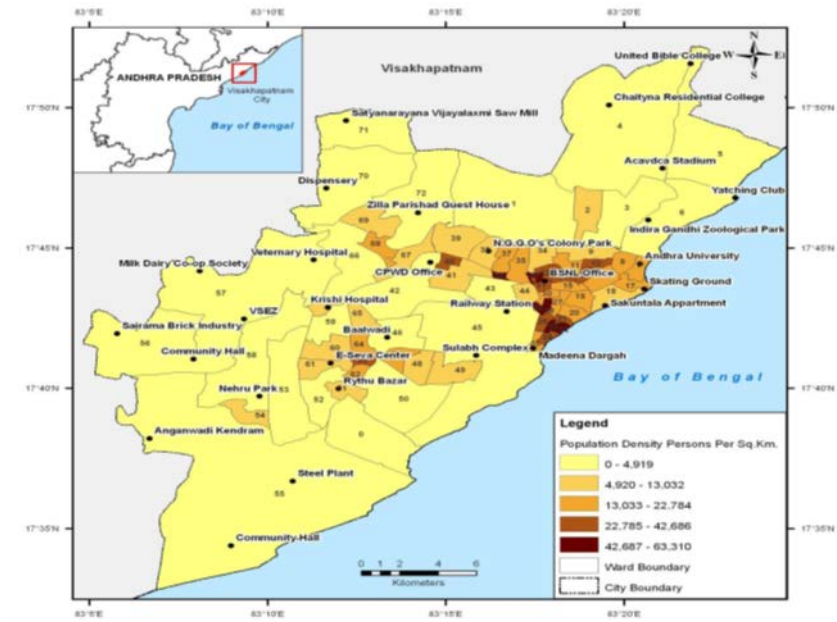
### **4. Urban Environment in Visakhapatnam: -**

#### **4.1. Demographic Particulars:**

Growth Rate of Slum Population in Urban India and Andhra Pradesh 1981-2021. The city population has increased from 5,65,513 to 2,175,000 during the past four decades at an increase rate of about 04 times, while the slum population has increased from 1,52,000 to 7,68,320 at an increase rate of 06 times over the period as shown in Table 1. The growth of slum population over the period is relatively higher than the total city population in all the periods. However, the city population growth as well as slum population growth has shown decline in the period 1981-91, when compared to the growth rate of 1971- 81. Another important aspect, the percentage of slum population to total population, has shown increase from 26.88 per cent to 35.32 per cent over the period. It is evident from the above analysis that the growth of slum population is very rapid over the period

**Table 1. Population Growth of GVMC (Greater Visakha Municipal Corporation)**

Year	Total Population	Percentage of the Growth
1981	5,65,513	53.27
1991	7,39,947	30.84
2001	13,45,938	81.89
2011	1,703,320	26.55
2021 (Approximately)	2,175,000	27.69



**Figure 2. Ward wise population density in Visakhapatnam city**

**4.2. Growth Rate of Slum Population: -**

Growth of Slums and Slum Population Greater Visakhapatnam Municipal Corporation is characterized by a very significant presence of the urban poor, with a growing poverty profile. Slum settlements have multiplied over decades and the living conditions of the poor have not improved. Environmental decline, vehicular pollution, inadequate basic services and infrastructure in the poor settlements hit the poor hardest. Slums are scattered across the city and surrounding areas, with high population densities and the number of people inhabiting them estimated to be around 7, 68,320 as shown in Table 2. It is estimated that more than half of these slums are on GVMC and Govt lands, and the rest on lands belonging to various public entities. Poverty has a visible gender dimension too. The incidence of poverty among women is higher and female-headed households constitute the poorest of poor. The poor, not only habitat in slums of GVMC area but are spread in squatter and informal settlements in small groups deprived of basic services. This makes them more vulnerable to vagaries of nature and threat of eviction. At present there are 793 slums (426 Notified & 367 Non-Notified) and the slum population is over 07 lakhs. A major problem is the incorporation of 32 villages around Visakhapatnam in the GVMC. Almost all these villages are inhabited by poor and the infrastructure is very low. These areas should be taken as „poor areas“ and special programmes need to be initiated to develop them on par with the city.

**Table 2. Growth rate in Slum Population of GVMC (Greater Visakha Municipal Corporation)**

S.No	Slum population	Percentage of slum Population growth	Percentage of slum population to total population
1	1,52,000	75.18	26.88
2	2,21,347	45.62	29.91
3	3,42,658	54.81	25.46
4	5,58,000	62.84	32.76
5	7,68,320	37.69	35.32

#### 4.3. Climate of the City: -

The climate of Visakhapatnam (also known as Vizagapatam, Vizag or Waltair) is tropical, with a rainy season from June to November, due to the monsoon, and a dry season from December to May. In recent decades, the monsoon has had its onset on average in 11 June. By mid-October, the north-east monsoon begins to blow, which for a few weeks still brings rain, though less than in south-east India.

From late March to early June, before the monsoon, it is very hot, and the temperature can exceed 40 °C (104 °F). In June 1995, it reached 45.4 °C (113.7 °F), while in May 2002 it reached 45 °C (113 °F). Showers can occur from time to time, especially in May.

In Visakhapatnam, precipitation amounts to 1030 millimetres (40.6 inches) per year: it is therefore quite abundant. It ranges from 8 mm (0.3 in) in the driest month (December) to 210 mm (8.3 in) in the wettest one (October). At Visakhapatnam, the sea temperature ranges from 26 °C (79 °F) in January to 30 °C (86 °F) in June. In Visakhapatnam, there are on average around 2630 sunshine hours per year.

#### 4.4. Environmental Attributes

The environmental great in the examine place become multi factorial and typically inspired via unplanned urbanization, extensive transportation, irresponsible industrialization, vicinity unique conditions, loss in flora cowl, boom in built-up location, ill deliberate developmental activities and carbon extensive lifestyles. The environmental nice varies from region to region within the metropolis location relying upon the assimilative capability of a area, population density and the amount of pollutants causing social damage, the extent of valuation and appreciation of the encircling environment by means of human beings in a vicinity and many others. a majority of these factors collectively accord exclusive values concerning the environmental great to special region within the metropolis. Environmental coverage coupled with local and zonal making plans that is presently underway with the aid of the APPCB takes into consideration the long term in addition to brief time period orientation. predominant environmental variables characteristic of the city which might be chargeable for the degradation of the satisfactory of the environment inside the town region are considered for describing the environmental state of affairs of Visakhapatnam - the factor and non-point resources of pollutants of air, noise, water, land, soil, regimes as well as coastal and marine sectors had been taken into consideration.

##### 4.4.1. Air pollution:

In iciness comparing to summer time seasons air pollution attention values were high. that is can be because of the meteorological conditions inclusive of atmospheric balance and inversion situations are more distinguished in winters. Vehicular air pollution is growing problem in Visakhapatnam. In iciness seasons RSPM, TSPM, SO<sub>2</sub>, NO<sub>x</sub> and ammonia concentrations were excessive in comparison to summer seasons. while no precise seasonal versions were found in metallic parameters. They had been at some locations higher in winters, however at a few places higher in summer time can be because of difference in dispersion. Normal air pollution concentrations in the monitoring locations have been seen in growing trend. The concentration of SO<sub>2</sub> changed into high for the duration of the day time. the height duration coincides with the peak hour of site visitors drift i.e., round 1030 hrs. The attention is better in summer time than in wintry weather. The NO<sub>2</sub> tiers had been maximum for the duration of the nights. The CO concentration tended to be excessive at some stage in the height hours of the visitors motion in the city. one of the assets of city air pollutants is vehicular emission. Carbon monoxide emissions are attributed to petrol pushed that is almost 85%. And 3 wheelers are the highest contributors of hydrocarbons. Diesel pushed vehicles make a contribution more than ninety% to nitrogen oxides. The information suggests that in standard the Poorna marketplace to RTC complex location is comparatively more polluted from the site visitor's area than other areas. The RTC complex vicinity statistics the very best price of pollutants.

##### 4.4.2. Water pollution:

The hydrological environment accommodates the interrelated components, i.e., ground water and floor water. Pollution at one factor in the system can finally affect the opposite.

Population in the Bowl area is ready 15 lakhs and the total sewage generated within the bowl region is set 158.1 MLD. Sewage remedy centres within the bowl vicinity are 86.0 MLD (29 MLD STP at Appughar, 50.2 MLD STP at vintage city location & 19.7 MLD STP in Port region) and a couple of X fifty four MLD STPs are underneath creation stage at Narava wherein the balance forty five. Eight MLD is proposed to be treated.

##### 4.4.3. Municipal Solid Waste: -

Solid waste generation per day from the Greater Visakhapatnam Municipal Corporation (GVMC) area was around 750 tons and collection efficiency of GVMC was over 91%. When compared to other major cities the quantity is low and the management practices following were at basic level only. In bowl area about 550 TPD of Municipal Solid Waste (MSW) is generated. At present the waste is being disposed at

Kapulauppada which is not a scientific disposal site. M/s. GVMC is proposed a “Waste to Energy” project for safe disposal of Municipal Solid Waste in the existing municipal dumping yard located at Kapulauppada.

#### **4.5. Environmental Conditions and Health Status: -**

The environmental conditions in slums are very poor and lack basic civic amenities like proper roads, drainage, protected water supply, street lights and adequate number of community toilets. Earlier studies have recorded that the common diseases prevalent in slums in Greater Visakhapatnam Municipal Corporation are gastro-enteritis, dysentery, liver enlargement, malnutrition, ringworm, scabies and other skin diseases. To overcome these hazards health infrastructure was developed and 22 urban primary health centres were established. Most of the slum communities and the poor access the services from these centres. However, in the newly incorporated villages, health facilities are totally inadequate – and at many places do not exist.

#### **5. Findings of the Study: -**

##### **Garbage and sewage facilities:**

Low sewerage network coverage within the complete GVMC place together with centre vicinity. loss of effective communicate approach loss of efficient power conservation measures. Insufficient sewerage remedy facilities resulting in discharge of untreated sewage into water our bodies. Very low recycling and reuse of wastewater. Insufficient drainage device, and not using a proper design of drainage. Excessive concentration of flood due to breaching of tanks. Disappearance of flood soaking up tanks. Dumping of particles and garbage into the open Nallahs. Unlawful encroachment of natural water guides

##### **Roads and Transports:**

Streamlining the heavy cargo transport. Institutional accountability. Declining Share of Public Transport resulting in traffic menace and environmental degradation. Lack of awareness and non-compliance of the commuters to traffic regulations.

##### **Land Tenure & Lack of Dependable Data:**

Loss of dependable records on diverse components of poverty inclusive of quantity of slums, slum populace, get right of entry to offerings like water and sanitation, livelihood, and so forth. Land tenure continues to be a frightening problem in addressing the troubles of the terrible. People residing in non-notified slums are maximum susceptible, as they're not officially recognised. They are most inclined with no normal incomes, get right of entry to fundamental services absence of tenure rights, etc.

##### **Infrastructure Deficiency:**

Deterioration of infrastructure created through investments under numerous slum development programs due to insufficient protection, finance and route inside the submit-task phase resulting in bad best of carrier availability to the connected to the citywide networks. With funds constraints, provider provision for the poor will become a sporadic interest rather than a regular provider delivery machine of nearby authorities.

##### **Vulnerability:**

Packages for the negative want also to focus on susceptible groups among them, like girls and children, disabled and destitute, aged and kids, etc. hassle of the poor residing inside the villages integrated into the GVMC recently. They lack basic infrastructure, livelihoods, right housing etc. The important venture is the formation of slums on hillocks and hill slopes wherein provision of fundamental services like water, sanitation could be very tough. There are several slums positioned at the relevant government lands like railways, defence institutions and many others. the protracted correspondence is a primary trouble in extending fundamental services to the terrible in those regions. The 2 groups: - fishermen and relli – require unique attention for improvement because of their cultural and different practices.

#### **6. CONCLUSIONS**

Clever cities need for you to combine themselves into country wide, regional and international infrastructures. Although the implementation factors depend strongly on the government of these infrastructures, Indian wide suggestions and directives will honestly make contributions to boost up the deployment of smart cities. software of smart solutions will enable towns to apply era, data and information to improve infrastructure and offerings. Comprehensive improvement on this way will enhance first-class of life, create employment and decorate incomes for all, especially the terrible and the deprived, main to inclusive cities. Health, inclusion and assisted residing will play an critical role, for the reason that demand for related services is growing, because getting old is changing disease composition.

Necessities cope with a number of technologies, past those related to cell and fixed networks. An included perspective on healthcare solutions for the near- to lengthy-time period can be foreseen, bridging a right away

whole in among the health place and the technological development of communications (radio and community components). up to now Indian cities were in conjunction with community firms and social marketers, have tended to favour the bottom up technology technique to smart cities. That is meditated within the hastily increasing wide variety of such projects being hooked up across the use. The CDP manner of Vizag has passed through great consultative system considered in prioritizing these vital sectors, provided under: - Water supply, Sewerage, stable Waste management, traffic and Transportation, storm Water Drainage & urban Poverty

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