

## THE ENVIRONMENTAL CONSEQUENCES OF URBANIZATION WITH SPECIAL REFERENCE TO THE CITY OF GUWAHATI, ASSAM

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### 1.Introduction:

Guwahati is believed to be the ancient Pragjyotispur, known as the city of eastern light. It is often referred to as the entrance to Northeast India. Guwahati, the entryway to northeast India, ranked as the second most polluted city globally in the previous year I.e on the year 2023. It recorded an average annual PM2.5 concentration of 105.4 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ), surpassing the WHO guidelines by 21 times. This was a direct result of the rapid urban development and beautification initiatives, leading to a rise in infrastructure projects and traffic congestion in various parts of the city. As a consequence, residents have been facing numerous health issues, particularly related to respiratory problems.

Moreover, The rapid urbanization in Guwahati has led to severe environmental degradation, resulting in issues such as deteriorating water quality, increased air pollution, noise pollution, challenges in waste disposal, and ultimately posing serious health risks.

### 2.Impact of Urbanization on the Environment of the City:

Guwahati has experienced significant urban population growth in the past few decades. Improved medical services, increased job prospects, and the aspiration for a higher quality of life are driving the surge in rural-to-urban migration, particularly from nearby towns and villages in Assam.

Urbanization has both positive and negative sides. First of all, let's see the positive outlook of rapid urbanization:

Urbanization has numerous positive aspects, including

- employment opportunities,
- advancements in technology and infrastructure,

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- enhanced transportation and communication systems,
- and the provision of high-quality educational and medical facilities.

Urbanization has significantly influenced the Guwahati city's culture, particularly among its youth. The rise in cafes and restaurants providing diverse exotic cuisines from around the globe is evident. A clear trend of embracing a globalized culture, particularly American and Pan-Asian flavours', can be observed. The American fast-food culture has seamlessly blended with the presence of popular chains such as KFC, Burger King, McDonald's, Taco Bell, and coffee giants like Starbucks.

City involves building water treatment facilities, laying down pipelines, and enhancing sewage treatment plants to improve sanitation within the urban area. Well Planned urbanization surely having positive effects. But however unregulated urbanization causes a vast negative effect in the Guwahati city.

As a consequence of unregulated urbanization in the city, there has been a rapid deterioration of the environment, leading to numerous issues such as housing shortages, deteriorating water quality, excessive air pollution, noise, dust, and heat, as well as challenges in managing solid and hazardous waste disposal. The urban areas are experiencing a swift decline in their environmental conditions.

The following are some of the major impact of Urbanization on the very environmental status of Guwahati city:

**a: The excessive utilization of natural resources:**

As a result of the swift growth in urban population, the utilization rate of natural resources such as water, forests, fossil fuels, and energy has escalated to an alarming extent. In order to accommodate the expanding population, forests are being cleared which eventually made a environmental issues regarding oxygen level and also climate change can also be regarded as an prime cause of deforestation. A decrease in the number of trees lead to natural calamities like floods.

**b. Air pollution:**

Air pollution has experienced a significant rise as a result of urbanization and industrialization. Urban areas serve as the primary contributors to anthropogenic carbon dioxide emissions, mainly

through the combustion of fossil fuels for industrial activities, transportation of people and goods, and other related processes. Industries and motor vehicles, which are prevalent in urban areas, are the major sources of greenhouse gases.

**c. Water pollution:**

With the rise of urbanization, there has been a simultaneous increase in the amount of waste, particularly in terms of water. Enormous quantities of waste water flow into rivers and canals, overwhelming their natural ability to recycle. As a result, the quality of water has deteriorated over time due to urbanization, leading to heightened sedimentation and an increase in pollutants in run-off. Furthermore, the direct disposal of human and industrial waste into water bodies has significantly contributed to the escalation of water pollution in urban areas.

**d.Noise pollution:**

Urban areas are notorious for the high volume of vehicles on the road, numerous industries emitting noise, various social gatherings, and functions. The noise generated by these vehicles, industries, social events, etc., contributes to noise pollution in urban areas, leading to various psychological and physical health issues.

**e.Solid waste disposal:**

The rapid growth of Urbanization, in Guwahati, has resulted in the accumulation of a large quantity of hazardous organic and inorganic waste on a daily basis. It is crucial for the authorities to implement effective waste management strategies to mitigate these issues and ensure a clean and healthy urban environment.

**f. Artificial Floods:**

In addition to the detrimental impact on air quality and public health, the city experiences annual flash floods during the warmer months. This phenomenon is a result of continuous rainfall accumulating in areas of high infrastructure development within the city.

This leads us to comprehend that the declining environmental conditions, caused by the processes of urban development, have been steadily escalating in various ways.

**2.1Growth of Urbanization in Guwahati:**

The data has been gathered from the internet and government records to observed the growth of Urbanization in the Guwahati.

- **Population Growth in Guwahati:**

Based on the 2011 census data, the population of the Guwahati municipal area was recorded at 963,429 individuals. The jurisdiction of the Guwahati Municipal Corporation (GMC) encompasses an area of 216.79 square kilometers, which was last expanded in 1991. Table 1 clearly indicates that Guwahati experienced a significant growth rate of 8.1 percent per annum between 1971 and 1991.

**Table No 1: Guwahati Population Growth (GMCA Area)**

<b>Year</b>	<b>Populations</b>	<b>CAGR%</b>
1961	1,00,707	8.7
1971	1,23,783	2.1
1991	5,84,342	8.1
2001	8,09,895	3.3
2011	9,63,429	1.8

*Source: Census 2011*

- **Rise in motor vehicle in Guwahati (Kamrup Metro):**

There has been a significant rise in the number of motor vehicles on the roads in Assam over the years. The district of Kamrup Metro, where the city of Guwahati is located, has also seen a gradual increase in the on-road vehicle population in recent years. According to table 2, the total number of registered vehicles increased from 57,509 in 2010-2011 to 71,906 in 2015-2016. A similar pattern can be observed in the total number of vehicles on the road, which rose from 532,933 in 2010-2011 to 852,522 in 2015-2016. This growth in motor vehicles can be attributed to rapid urbanization. Unfortunately, this increase has led to a decline in air quality in the city, resulting in excessive air pollution. The harmful emissions from vehicles pose various health risks and have a negative impact on the environment.

Rise in motor vehicles in the city causes heavy traffic congestion and thus produces more O<sub>3</sub> precursor emissions, leading to more adverse air quality issues.

**Table No 2: Regarding increasing of motor vehicle**

year	City	Total no. of vehicles. Registered	Total no. of vehicles. On the road
2010-2011	Kamrup (M)	57509	532933(p)
2015-2016	Kamrup (M)	71906	852522

*Source: Internet*

- **Air Index Quality of Guwahati:**

The air quality in urban areas has been negatively impacted by the expansion of motor vehicles and industries. The excessive emissions from these sources have led to a significant increase in air pollution in Guwahati. This pollution has introduced various harmful pollutants into the air, resulting in the emergence of different diseases and ailments among the population. Air Index Quality in the office three years from 2019-2021.

**Table No :3**

YEAR	AIR INDEX QUALITY	CITY
2019	56 ug/m <sup>3</sup>	Guwahati
2020	62 ug/m <sup>3</sup>	Guwahati
2021	60 ug/m <sup>3</sup>	Guwahati

Table No 3 triggers a poor air quality category.

### **3.Existing statutory Laws towards Environmental Protection:**

In India, the Constitution itself recognizes the importance of protecting and conserving the environment and ensuring the sustainable use of natural resources. The Fundamental Duties outlined in Part IVA of the Constitution enforce the duty of every citizen to protect and improve the natural environment, including forests, lakes, rivers, and wildlife, and to show compassion towards living creatures. Additionally, Part IV of the Constitution, which includes the Directive Principles of State Policies, directs the State to make efforts to protect and improve the environment, as well as safeguard the forests and wildlife of the country. In line with these constitutional provisions, the legislature has passed specific legislations for the conservation of forests.

- **The Forest Conservation Act, 1980:** This Act aims to ensure the conservation of forests and their resources. It was enacted to address the issue of deforestation prevalent throughout India. The Forest Conservation Act, 1980 contains various provisions that promote and encourage afforestation in non-forest areas, while also seeking to eliminate deforestation. The Act applies to all types of forests, including reserve forests, protected forests, and any other forests regardless of ownership. It prohibits the allotment of forest land for non-forest purposes and imposes restrictions on the de-reservation of forests without prior approval from the Central government.
- **Wildlife (Protection) Act, 1972:** The Indian Parliament enacted this Act in 1972 to safeguard and protect the wildlife, including flora and fauna, in the country. The Wildlife (Protection) Act provides protection to wild animals, birds, and plant species to ensure environmental and ecological security. It establishes six schedules that categorize different species based on the level of protection they require, with a comprehensive list of endangered species. The Act also prohibits the hunting of endangered species.

- **The Environment (Protection) Act of 1986:** was established with the primary goal of safeguarding and enhancing the environment. It seeks to enforce the resolutions set forth in the 1972 Stockholm Declaration on the human environment. This legislation stresses the importance of creating consistent laws to protect the environment, imposing severe penalties on those who violate these laws, and collaborating with various agencies governed by existing regulations. The Act grants the Central Government the authority to organize nationwide initiatives to raise awareness about environmental protection and to implement necessary measures to safeguard and regulate the environment.
- **The National Forest Policy of 1988,** introduced by the Government of India and issued by the Ministry of Environment and Forests, represents a significant advancement in forest and environmental management. This policy prioritizes the conservation of forests, encompassing their preservation, maintenance, sustainable use, restoration, and enhancement of the natural environment. The National Forest Policy underscores the importance of maintaining environmental equilibrium, protecting natural forests and wildlife, preventing soil erosion, expanding forest cover through extensive afforestation programs, and meeting the needs of rural and tribal communities for fuel, food, forest products, and timber.
- **The Forest Rights Act, 2006:** - The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act also called the Forest Rights Act was passed on December 18, 2006, and it came into effect on December 1, 2007. This Act came out as a result of constitutional mandate and directions from the Supreme Court to protect the rights of tribal dwellers residing in the forest areas and preserve their identity and culture. Section 3 of the said Act ensures some rights to the eligible persons. Some of the rights are:- Right to forest land [Section 3 (1) (a)], Right over minor forest produce [Section 3 (1) (b)], Right to minor forest produce [Section 3 (1) (c)], Right to fishing, Right to graze livestock [Section 3 (1) (d)], Right of access to forest land on a seasonal basis, Right to habitat [Section 3 (1) e], Customary rights over disputed land [Section 3 (1) (f)], Right to rehabilitation in case of illegal eviction or forcible displacement etc.

#### **4.Important Assam Government Initiatives towards Environment Protection :**

The Assam Government's budget announcements mark the beginning of a fresh era of environmental responsibility and sustainable progress in Assam. Assam is making significant strides towards a greener and more resilient future, with its focus on integrated water resource management, renewable energy projects, and conservation endeavours.

Significant initiative towards Environment protection taken by the Assam Government are discussed as follows:

- **Mission Lifestyle:**

Assam Chief Minister Himanta Biswa Sharma on the year 2023, launched the Mission Lifestyle for Environment (LiFE) initiative in the state. LiFE is a global movement spearheaded by Prime Minister Narendra Modi. LiFE initiative aims to promote an eco-friendly lifestyle by focusing on using resources instead of consuming them.

- **Amrit Brikshya Andolan and International Recognition:**

Assam has initiated a notable endeavor in promoting green growth and environmental sustainability through the Amrit Brikshya Andolan. As part of this movement, a crucial step was taken to plant more than one crore seedlings of 53 commercially valuable species throughout the State. This collective action is geared towards not only increasing the greenery but also supporting ecosystem health and biodiversity.

- **Green Transportation:**

The Assam Government have made a committed endeavor to sustainable practices by introducing various programs to support eco-friendly transportation. These initiatives involve a decrease of 2 percent in Motor Vehicle Tax and waivers on registration fees for new electric vehicles, which are designed to promote the use of environmentally friendly options. Furthermore, Vehicle Scrappage Policy has led to the responsible dismantling of 3,000 vehicles using advanced techniques, thereby reducing the environmental footprint.

- **Mandatory Rooftop solar:**

The State Government has recently Implemented a significant measure to promote sustainable energy practices. A new law has been introduced, making it mandatory for all newly constructed buildings, whether they are privately owned or public, to include rooftop solar facilities. This progressive initiative clearly demonstrates our dedication to reducing carbon emissions and shifting towards renewable energy sources. By enforcing the installation of solar panels on rooftops, our objective is to utilize the clean and plentiful solar energy to supply power to our buildings, thus playing a crucial role in creating a greener and more eco-friendly future.

### **5.Objective:**

- To study impact of Urbanization on the environment in the city of Guwahati Assam
- To study the existing laws of environmental protection in India .
- To study the Assam government initiative towards Environment.

### **6.Review of Literature:**

The Effect of Urbanization of Environment: With Special Reference to the City of Guwahati Assam ,(2020),an article written by Mehzabeen Sultana discusses broadly on the impact of Urbanization in environment of Guwahati in detail.

A Brief Overview Of Environmental Safeguard Policies in India,2021,an article written by Akansha Tiwari discusses broadly on the environmental safeguard policies and the constitutional provisions of environmental protection and provide a critical assessment of it.

Urbanization and Its Impact on Environmental Sustainability: A Comprehensive Review,(2023)an article written by Bireswar Bera, Sandeep chinta, Darshan A Mahajan,Allika Salaija who discussed thoroughly on environmental consequences stemming from urbanization trends.It delves deep into the nexus between rapid urban growth and the subsequent ecological consequences.

Impacts of urbanisation on environment,(2012) an article written by S Uttara,Nishi Bhuvandas, Vanita Agarwal discusses urbanization in India and metropolitan cities have leading to conclude on the existing causes of damage to the environment due to urbanization and preventive measures to keep a check on them.

Impacts Of Urbanization On Environment,(2018) an article written by C. Sivakkolundu ,Sujatha discuss broadly emphasizes on the effect of urbanization on environmental components mainly climate, biosphere, land and water resource.

### **7.Research Methodology:**

The methodology used in this paper is analytical and descriptive research. The topic has been discussed by analysing government schemes and existing laws relating to environmental protection. The materials or data's as well as information related to the topic are collected through various secondary sources i.e., from books, articles, newspapers, websites journals etc.The primary sources includes census reports legislations etc.

### **8.Conclusion:**

It can be inferred that urbanization poses a potential threat to the environment. The process of urbanization can lead to various detrimental effects on the environment, such as global warming, water pollution, noise pollution, air pollution, and degradation of air quality. Additionally, the lack of effective governance in today's cities has contributed to the proliferation of informal settlements and slums, resulting in dire living conditions within urban areas.

Upon examining the city of Guwahati, it becomes evident that urbanization has had a significant impact on its environment. This impact is manifested through the increase in the population, the rise in Air Quality Index (AQI) values, , and the surge in the number of motor vehicles within the city.

Urbanization has created a trade-off between developmental activities and environmental degradation. While urbanization has facilitated the growth and progress of cities in various aspects, this development has come at the expense of the environment. It is crucial to maintain a proper balance between the city's development and environmental preservation. Therefore, a strict adherence to the principles of sustainable development is imperative to ensure the conservation of the environment.