

A Geographical Analysis Of Basic Amenities And Infrastructure In India

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ABSTRACT

Access to the basic public services which are also known as fundamental civic services and infrastructure like electricity, sanitation drinking water, toilet facility, housing condition. These types of amenities are considered the backbone of the cities and towns, a huge migration that has been reported for seeking the better fundamental necessities for human well-being. Urban areas of country is assumed as center of development in reference with basic amenities and infrastructure. As per report of census 2001, at least 16 percent HHs have no accessibility of safe drinking water, approximately 13 percent of the urban HHs do not have accessibility of electricity and at least 27 percent of urban HHs have no availability of toilet facility. It is observed that one fifth of the urban households do not have any access to sewage facility. The proportion of households without access to basic amenities has increased significantly after ten years, as showed by the 2011 census report. However, the level of basic facilities in urban areas remains unsatisfactory, with 7% of urban households not having electricity, 12% not having safe drinking water, and at least 17% not having a toilet facility. This comprehensive study focuses on examining access to basic amenities, which covers at the state level, including 28 states and 7 UTs. This paper aims to analyse the availability of urban and rural HHs amenities in India based on HHs facilities and HHs assets data released by the Indian population census (2001 and 2011) and NSSO (78th round survey).

Key words: public services, basic amenities, HH (household), UTs (union territories)

1. INTRODUCTION

Urban areas are considered as the pioneer of civilizations from ancient times. The quality of life, availability of basic facilities and the lifestyle of people are higher in cities in comparison to towns and villages. From the ancient civilization to modern present time, basic needs and fundamental resources for humans are the centre of planning in matter of settlement plans because it affects the human health and wellbeing (Bhagat, 2010). The priority of a government is to provide basic amenities such as clean roads, drinking water, sanitation, electricity, toilet facilities, LPG/kerosene as fuel in cooking, kitchen facilities, and the concrete roof of the house (Shav, 2007).

According to census 2011, about 377 millions of Indian population live in urban areas that is showing 2.76 percent growth rate per annum during 2001-2011 and the rate of urbanization at national level which increased from about 28 percent in 2001 and 31.1 percent in 2011. As duration from 2001 to 2011, 3.3 percent increasing rate urbanization in India has observed which is higher than 2.1 percent of increase during 1999-2001. This paper focuses on evaluation the availability and utility pattern of basic household amenities of India. The quantity and the quality of basic infrastructure and resources for humans has been affected and disturbed due to industrialization and migration in cities. The pressure of population on urban infrastructure and services is

also increasing with population growth in the cities. The Indian government individually and collaboration with international agencies like world bank, WHO launch various schemes, policies and plans time to time for providing better health and environment to the people.

The priority and duty of a government and local authorities are to provide fundamental facilities such as clean drinking water, electricity, toilet facilities, better transportation services, LPG/PNG as fuel in cooking, kitchen facilities, and health care facilities (Liao, 2019). As per 2011 census of India, it is estimated in 2011 census that about 33.1 crores total households in which 22.1 crores belong to rural regions and 11crores belong to urban regions of India.

It shows the high population growth in urban areas, which is the cause of the increase in pressure on urban land. India is estimated to have a remarkably high rate of population growth, which is about 1.67 percent per annum in comparison to 1.4 percent of the entire world, whereas 1 percent in China. The unprecedented population growth of cities have directly affected the physical and diver socio economic infrastructure of the cities (Kalwar et al... 2016).

Urbanization process and economic development have quickly transferred from developed countries to developing countries in the world. Indeed, it's considered as symbol of economic development and progress of the countries. More recently, as per UN HABITAT : world cities report 2022 , its estimated that global urban population will be grow from 56% by 2021 to 68% by 2050. Recently developing countries in Asia like India and China are the centre of rapid urbanization from few decades. It is forecast that 675 million human population of India will reside in urban areas or urban centre by 2035 that will be 43.2% of the total population of India. (UN HABITAT 2022)

2. INITIATIVES AND POLICIES ON BASIC INFRASTRUCTURE AND AMENITIES

This study broadly discusses the fundamental necessities of urban and rural populations that are required for sustaining a healthy and wealthy life. The Indian government and some international agencies implemented various programs, initiatives, plans, and policies to overcome the issues regarding basic needs, amenities, and infrastructure of people. Basic amenities are not only organized and supported by municipalities, national government agencies, and departments but also funded by international agencies.

In recent decades, the Indian government has implemented several crucial schemes and programs that show the significance and importance of basic amenities for human welfare. The central government has implemented various programs like Swachh Bharat Mission (launched in 2014), Pm Awas Yojana (launched in 2015), AMRUT (launched in 2015), PM Ujuvala Yojana (launched in 2015), PM Sahaj Bijili Har Ghar Yojana—Saubhagya (launched in 2017), and Jal Shakti Abhiyan: Catch the Rain (launched in 2021) that assured improvement and enhancement of urban basic facilities like roads, transportation, drinking water, electricity, houses, sewage, and sanitation in the country.

Issues related to basic amenities due to rapid urbanization is being experienced by most of the developing countries therefore international agencies and organization like UNO, World Bank, UNICEF have emphasised on raising the issues as global agenda and set the programs of fulfilment of basic human necessities and provided financial assistance to the needy countries. UNO has given the importance and concern about basic amenities of humans that is also covered under SDGs (sustainable development goals), as the second goal is to erase the hunger, the third goal is to maintain health and wellbeing, the fourth goal is to provide quality education, the sixth goal is to provide clean water and sanitation, and the seventh goal is to develop affordable and clean energy.

UN (United Nations) suggested that all of its member countries to create plans for achieve the SDG goals and enhance the quality of life for their citizens. As member country in UN, India is also implemented schemes and plans to achieve SDG goals and providing better quality of human life.

3. OBJECTIVES

- To assess the urban and rural distribution of amenities and infrastructure in India.
- To analyse the changes in access to amenities in rural and urban India over the period of a decade.

4. METHODOLOGY

This entire study is based on secondary data sources which are acquired from census HHs and house assets (2001, 2011) and NSSO (78th round survey). Census and NSSO (National sample survey office) are the two most crucial data sources of household basic amenities in India. These secondary data is used to analysis the availability and utility of basic infrastructure and amenities of rural and urban households of India. Tabulation and graphs are used to show the data analysis and evaluation.

These data sources provide the comprehensive information regarding HHs amenities such as source of clean cooking fuel, clean drinking water, source of drinking water, electricity, toilets facility, housing condition, etc. In this study, multi indicator survey (MIS) is implemented to collect the data based on socio economic diverse aspects of entire country except villages belong to Andaman and Nicobar islands by NSSO in its 78th round

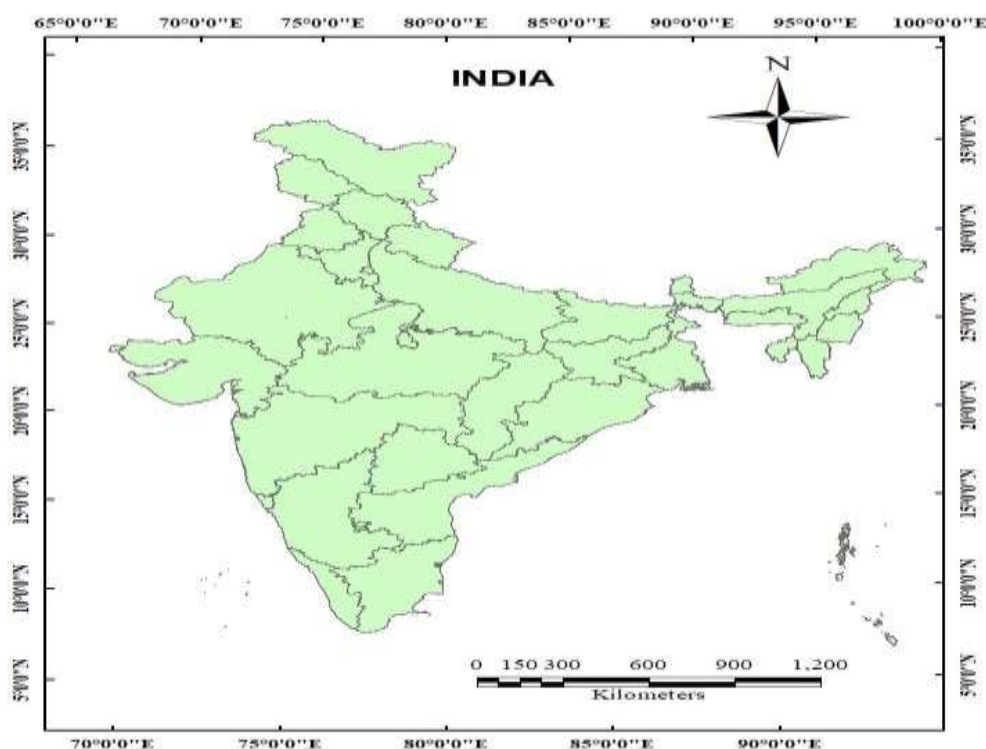
survey (2020-2021). Multiple indicator survey (MIC) is a large scale sample survey adopting scientific sampling methods as a survey tool for data collection in entire country.

Multiple indicator survey as 78th round survey by NSSO was conducted during January to December 2020. The data from census and NSSO regarding household basic amenities have been assessed and analysed into two categories like rural households and urban households of the country to cover up all socio-economic aspects household amenities.

5. STUDY AREA

India ranks fourth in Asia and seventh worldwide as per total area. India is located north of the equator, and its latitudinal and longitudinal coordinates are $8^{\circ}4'$ to $37^{\circ}6'$ north and $68^{\circ}7'$ to $97^{\circ}25'$ east. India covers 2.4 percent of the entire geographical area in the world, where 17.5 percent of the population of the world lives. According to the statements of the world population report, United Nations Population Fund (UNFPA) 2023, "India is the most populous country in the world with 1428.6 million people by the middle of 2023". Along with the growth in population of the country, the need and demand for basic amenities in urban and rural areas are also increasing day by day.

Figure 1: Map of India (administrative divisions)



6. ANALYSIS AND DISCUSSION

Multiple Indicator Survey (MIS) of National Sample Survey Organisation (NSSO) collected different type of information from each household regarding drinking water such as proximity to major source of drinking water, major source of energy such as LPG, firewood and access to latrine. These types of different aspect of rural and urban households are covered in this study.

Table 1 shows that 29 percent of rural households, 60.5 percent of urban households and 39.1 percent overall HHs have major source of water within dwelling place followed by 30 percent rural household, 21.2 percent urban and 27.1 percent overall household have major source of drinking water Outside dwelling place but within premises followed by 41.1 percent rural households, 18.4 percent urban households and 33.7 percent overall households have source of drinking water outside premise.

Approximately 46.7 percent rural households, 6.5 percent urban households and 27.1 overall households have firewood, chips and crop residue as a major sources of energy followed by 49.4 percent of rural households, approximately 89 percent of urban households and 62 percent overall household have LPG as primary source of energy. About 3.7 percent rural households, 2.8 urban households and 3.5 percent overall households have other modes of energy. About 0.2 percent of households, 1.7 percent of households and 0.7 percent overall household have no cooking arrangement.

About 68.8 percent of rural households, 80.8 percent urban households and 72.6 percent overall households have access to latrine in specific use followed by 8.7 percent rural HHs, 13 percent urban HHs and 10.1 percent overall HHs have access to latrine in normal use within building, followed by 0.4 percent of rural households, 2.8 percent of urban households and 1.2 percent overall households have access to latrine in public toilet followed by 0.8 percent of rural household, 0.5 percent of urban HHs and 0.7 percent of overall HHs have other type of access to latrine. About 21.3 percent rural households, 2.9 percent of urban HHs and 15.4 percent overall HHs have no access to toilet facility.

Table.1: Household's Amenities in India

| | AMENITIES | Distribution of Households | | |
|---|---|----------------------------|-----------|--------------|
| | | RURAL (%) | URBAN (%) | Over (%) all |
| 1 | Proximity to the major source of drinking water: | | | |
| | Within dwelling place | 29 | 60.5 | 39.1 |
| | Outside dwelling place but within premises | 30 | 21.2 | 27.1 |
| | Outside premises | 41.1 | 18.4 | 33.7 |
| 2 | ALL | 100 | 100 | 100 |
| | Primary sources of energy: | | | |
| | Firewood, chips and crop residue | 46.7 | 6.5 | 33.8 |
| | LPG | 49.4 | 89.0 | 62.0 |
| | Other modes* | 3.7 | 2.8 | 3.5 |
| | No cooking arrangement | 0.2 | 1.7 | 0.7 |
| 3 | ALL | 100 | 100 | 100 |
| | Access to latrine | | | |
| | Specific use of the HHs | 68.8 | 80.8 | 72.6 |
| | Normal use of HHs in the building | 8.7 | 13.0 | 10.1 |
| | Public use | 0.4 | 2.8 | 1.2 |
| | Other type of availability | 0.8 | 0.5 | 0.7 |
| | No availability of toilet facility | 21.3 | 2.9 | 15.4 |
| | ALL | 100 | 100 | 100 |

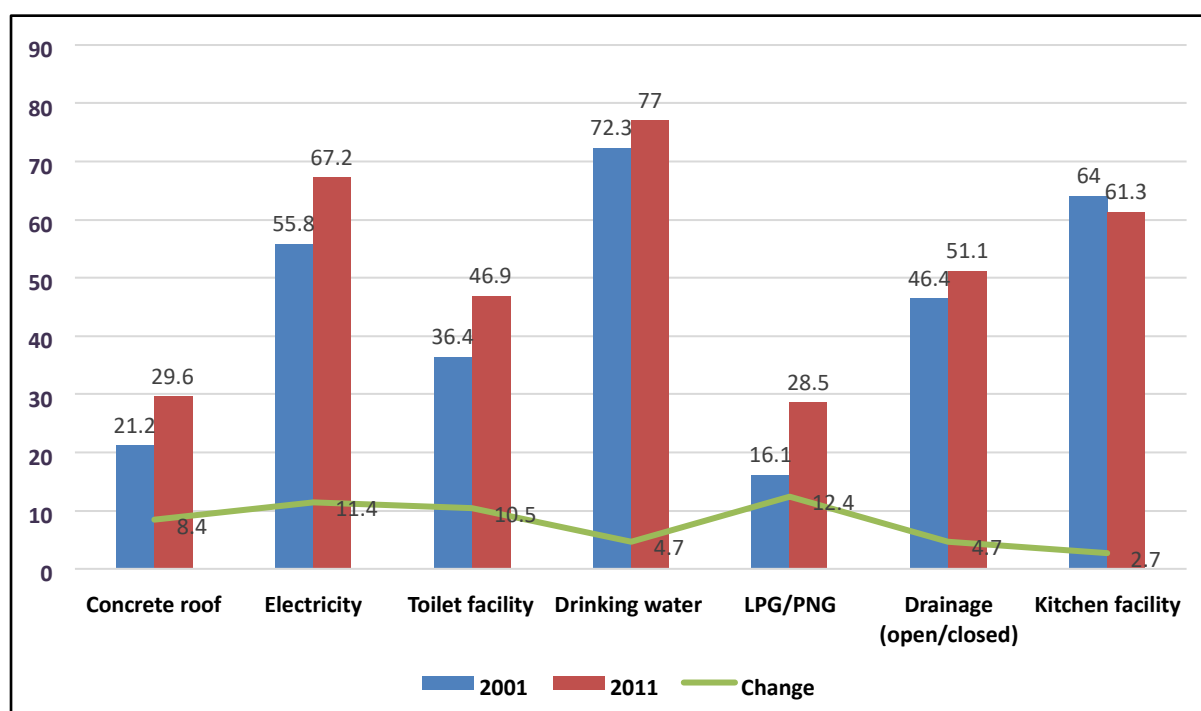
Source: NSSO (78th round survey 2020-21)

*other different source of energy consist of: different petroleum natural gases, cow dung, buffalo dung, kerosene, coal, biogas- methane, ethanol, electricity etc.

Table.2: Decadal Changes in Access to HHs Amenities and Infrastructure

| Amenities | 2001 | 2011 | Change |
|------------------------|------|------|--------|
| Concrete roof | 21.2 | 29.6 | 8.4 |
| Electricity | 55.8 | 67.2 | 11.4 |
| Toilet facility | 36.4 | 46.9 | 10.5 |
| Drinking water | 72.3 | 77 | 4.7 |
| LPG/PNG | 16.1 | 28.5 | 12.4 |
| Drainage (open/closed) | 46.4 | 51.1 | 4.7 |
| Kitchen facility | 64 | 61.3 | 2.7 |

Source: HHs amenities and assets data by census 2001 and 2011 (Household in %)

Figure.2: HHs Amenities and Their Changes from 2001 to 2011. (In %)

Source: HHs facilities and assets data by census 2001 and 2011

Houses, HHs facilities and assets data of India by census 2001 and 2011 are used to show in table 2 which are following as about 21.2 percent of households according to 2001 census and 29.6 percent of households according to 2011 have concrete roof with 8.4 percent growth. About 55.8 percent households according to 2001 census and 67.2 percent households according to 2011 have electricity with the growth of 11.4 percent. as per data in table 2 shows 10.5 percent growth in household toilet facility from 2001 to 2011 which is observed as 36.4 percent in 2001 and 46.9 percent in 2011.

It is estimated that about 72.3 percent households according to 2001 census and 77 percent households according to 2011 have supply of drinking water with 4.7 percent growth within ten years. About 16.1 percent households according to 2001 census and 28.5 percent households according to 2011 census used LPG (liquid petroleum gas)/PNG as cooking fuel but still 71.5 percent households didn't use LPG /PNG as major source of cooking fuel, as per 2011 census data.

It is observed that 12.4 percent growth in households within ten years that use LPG/PNG as cooking fuel. 46.4 percent households according to 2001 census and 51.1 percent households according to 2011 have open/closed drainage. About 64 percent households according to 2001 and 61.3 percent according to 2011 households have kitchen facility whereas 53 percent of rural HHs and 79 percent of urban HHs of India have kitchen facility, as per 2011 census data of household amenities and assets.

Table.3 Decadal Change in the Status with Data Arrangement of Urban and Rural Households.

| AMENITIES | | URBAN (%) | | RURAL (%) | | TOTAL (%) | |
|-----------|---------------------|-----------|------|-----------|------|-----------|-------|
| | | 2001 | 2011 | 2001 | 2011 | 2001 | 2011 |
| 1 | HOUSING CONDITION ; | | | | | | |
| | GOOD | 64.3 | 68.4 | 44.8 | 45.9 | 50.2 | 53.11 |
| | LIVEABLE | 32.3 | 28.7 | 48.9 | 47.6 | 44.3 | 41.5 |
| 2 | DILAPIDATED | 3.6 | 2.9 | 6.2 | 6.5 | 5.5 | 5.4 |
| | ACCESS TO DRINKING | | | | | 72.3 | 77 |
| | WATER; | | | | | | |
| 3 | WITHIN PREMISES | 65.4 | 71.2 | 28.7 | 35.0 | 39 | 46.6 |
| | NEAR | 20.7 | 20.7 | 51.8 | 42.9 | 44.3 | 35.8 |
| | AWAY | 9.4 | 8.1 | 19.5 | 22.1 | 16.7 | 17.6 |
| 4 | ELECTRICITY | 87.5 | 92.7 | 43.5 | 55.3 | 55.8 | 67.2 |
| | LATRINE FACILITY ; | | | | | | |
| | WITHIN PREMISE | 73.7 | 81.4 | 21.9 | 30.7 | 36.4 | 46.9 |
| 4 | NOT WITHIN PREMISE | 26.3 | 18.6 | 78.1 | 69.3 | 63.6 | 53.0 |

Source: household amenities and assets data by census 2001 and 2011 (Household in %)

For the analysis of basic amenities and infrastructure in this research paper, some of most important indicators have been selected to show the number of people still deprived from basic needs like liveable housing, access to drinking water, electricity and latrine facility. All these indicators for assessment which we have selected and taken data from HHs facilities and assets, census 2001 and 2011. Table 3 shows that According to household amenities and assets data of census, Housing condition is measured by three sub categories like good, liveable and dilapidated and two other categorised as rural household and urban households.

Houses are one of the most significant infrastructure for maintaining prosperous and healthy human life, about 64.3 percent urban HHs as per census data 2001 and 68.4 percent urban households as per 2011 census data have good housing condition. 44.8 percent rural households as per 2001 census and 45.9 percent rural households as per 2011 census data have good housing condition. According to census data of 2001 and 2011, 50 percent and 53.11 percent total households have good housing condition.

Table.3 shows that about 32.3 percent urban HHs and 48.9 percent rural HHs as per 2001 census have liveable housing condition and 28.7 percent urban households and 47.6 percent rural households as per 2011 census have liveable housing condition but 44.3 percent total households according to 2001 census and 41.5 percent total households according to 2011 census have liveable housing condition in India. About 2.8 percent decline in total liveable houses within ten years can be observed through table.3. Approximately 3.6 percent urban households, 6.2 percent rural households and 5.5 percent total households according to 2001 census have dilapidated housing condition in India and about 2.9 percent urban households, 6.5 percent rural households and 5.4 percent total households have dilapidated housing condition as per census 2011.

Drinking water is one of the major need for sustaining human life that is considered as basic amenities of households. As table.3 shows that about 72.3 percent according to 2001 census and 77 percent according to 2011 census have access to drinking water in India in which 65.4 percent urban HHs and 28.7 percent rural HHs and 39 percent total HHs as per 2001 census have availability of drinking water within premises. About 71.2 percent urban households, 35 percent rural households and 46.6 percent total households have availability of clean drinking water within premises.

Some Indian rural population have to face difficulties in finding drinking water within premises. Approximately 20.7 percent urban households, 51.8 percent rural households and 44.3 percent total households have access to drinking water at near premises, as per 2001 census. About 20.7 percent urban households, 42.9 percent rural households and 35.8 percent total households have access to drinking water at near premises, as per 2011 census. About 9.4 percent urban households, 19.5 percent rural households and 16.7 percent total households according to 2001 census have drinking water away from premises. About 8.1 percent urban households, 22.1 percent rural households and 17.6 percent total households according to 2011 census have drinking water away from premises.

Electricity is one of the important indicator of basic amenities that is selected for evaluation by census of India. According to 2001 census about 87.5 percent urban households, 43.5 percent rural households and 55.8 percent total households have electricity. According to 2011 census about 92.7 percent urban households, 55.3 percent rural HHs and 67.2 percent total HHs have electricity. It is seen a good growth in electricity supply in urban households but still about 44 percent rural households don't have electricity supply, as per 2011 census. There is lack of electricity supply in rural households in India.

Latrine facility is one of the fundamental needs of human in households and it is also known as toilet facility. It affects human health if it is not built right place with appropriate facility. According to 2001 census data, 73.7 percent urban households, 21.9 percent rural HHs and 36.4 percent total HHs have latrine facility within premises. According to 2011 census data, 81.4 percent urban households, 30.7 percent rural households and 46.9 percent total households have latrine facility within premises. About 26.3 percent urban households, 78.1 percent rural households and 63.6 percent total households according to census 2001 do not have latrine facility within premises. About 18.6 percent urban households, 69.3 percent rural households and 53.6 percent total households according to census 2011 do not have latrine facility within premises.

7. CONCLUSION

This research paper aims to analyse the past few year data of basic amenities and infrastructure in India that was released by census and NSSO. Identifying the growth in the availability of household amenities, it is also estimated to work on weak section of household amenities distribution in the county. This entire research paper assessed and observed the changes in percentage of household amenities in urban and rural area. It can be seen through table no 3 that amenities and infrastructure in urban area were improved much better than rural areas during 2001 to 2011 and level of fundamental amenities and infrastructure are not satisfactory in rural households.

The gaps in accessibility to fundamental amenities and infrastructure between urban lands and rural lands have seen extremely high in some basic amenities and infrastructure like drinking water, electricity, and latrine facility. All such indicators of basic amenities and infrastructure have been reported somewhat changed over the past few years. Through the analysing of these elements, the research aims attempts to propose recommendations for improving nationwide sustainable development, urban infrastructure and amenities, boosting the standards of living for people. The outcomes of study can assist to well inform decision-making

for urban planners, policymakers, and stakeholders that will help to provide more resilient and sustainable future for the country.

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