

# Impact on Ahmedabad Real Estate Sector due to High-Rise Buildings ( $\geq 45\text{m}$ )

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**Abstract** - High-rise buildings are one of the most essential parameters of the city for observing the growth and smart development of the city. With the rapid increase in the population and urbanization, there will be more demand for residential and commercial spaces. To meet these demands, the development of high-density, high-rise buildings is inevitable. High-rise buildings help to grow cities vertically, minimizing the use of one of the most important resources known to mankind, i.e., land. In this study, the impact on the real estate sector of Ahmedabad due to high-rise buildings having a height of more than or equal to 45 meters is identified using the property buyer's demand & developers' opinions for high-rise buildings. The main aim of this research was to identify the impact of high-rise buildings. This was done by questionnaire surveys, land costs, and preparing a financial model. The questionnaire survey for current residents of the high-rise building was initially followed by questionnaire surveys for property buyers and developers to identify their opinions on buying a property in a high-rise building and their perspectives on developing high-rise buildings, respectively. After this survey, land costs for selected areas were collected and a financial model was prepared. The analysis and financial model were further compared to conclude the research. By comparing the results from all these data, the demand and supply of high-rise buildings in the city of Ahmedabad are identified.

**Key Words:** High-rise building, urbanization, inevitable, financial model, land.

## 1. INTRODUCTION

"Real estate" can be defined as any property in the form of land or building. Real estate property consists of residential, commercial, industrial, and vacant land. The residential properties include apartments, condominiums, bungalows, etc. Commercial property includes retail shops, shopping malls, office buildings, hotels, etc. Industrial property includes warehouses, factories, logistics, etc.

There is no such absolute definition of a high-rise building. It is a subjective term. Say, earlier buildings having 3-storey were considered high-rise. Now the same 3-storey building is considered low-rise due to buildings having more storeys. Say, a building with 15

storeys can be considered a high-rise for Ahmedabad, whereas a building with 10-15 floors can be considered a midrise for cities like Mumbai.

The height limit for high-rise buildings in Ahmedabad was 45 meters till 2017 and then the limit was raised to 70 meters. Along with permission for a 70-meter tall building, there are certain limitations such as road width. For a 45-meter tall building, the adjoining road width should be equal to or more than 18 meters. For a 70-meter tall building, the adjoining road width should be equal to or more than 36 meters wide.

On August 18, 2020, the Government of Gujarat announced the allowance of high-rise buildings in the five major cities of Gujarat i.e. Ahmedabad, Surat, Rajkot, Vadodara, and Gandhinagar. This will allow high-rise buildings to have a height of more than 100 meters. The main aim of this decision is to attract FDI and optimum utilization of the land.

## 2. NEED FOR THE STUDY

The total population of Gujarat was 6,03,83,628 (Census,2011) and that of Ahmedabad city was 55,77,940 (Census,2011). The estimated population of Ahmedabad will cross 8 million by 2021, and the urbanization rate in Gujarat is 42.6%, i.e., among the total population, 42.6% lives in urban areas, and it is growing rapidly every decade.

Rapid urbanization will lead to a more urbanised population, which will increase the housing and commercial demand to meet these demands. More residential and commercial development will be needed, but due to scarcity and expensive urban land, smart development will have to be imperative and vertical growth (high-density, high-rise buildings) will be vital for the city. Despite numerous tall buildings around the world, their impact on real estate remains significantly understudied.

### 3. OBJECTIVES

To identify whether there will be demand for high-rise buildings; to study the impact of increased FSI for high-rise buildings with a height of more than 100 meters; to find out what will be its impact on land prices; and to identify whether the high-rise buildings will benefit the property buyers or not.

### 4. SCOPE & LIMITATIONS OF THE STUDY

The scope of the study includes demand assessment of land through the collection of land costs in selected areas, demand assessment for residential and commercial properties in high-rise buildings through questionnaire surveys done by the property buyers, study of the current market scenario of the real estate sector for high-rise buildings through questionnaire surveys done by the developers, and determining the property rate differences of high-rise buildings between the west and east regions of Ahmedabad, including construction and land costs through developing a financial model.

The research is limited to the city of Ahmedabad for buildings with a height of more than or equal to 45 meters and focuses on high-rise residential real estate.

### 5. WHY $\geq 45$ m?

The recently introduced tall building policy allows permission for buildings taller than 100 meters, as it is the initial notification stage and if 100 meters is considered, it would be a complete hypothesis. Even if buildings higher than 70 meters had been considered, there would be a very limited scope of work due to the limited number of such buildings. Hence, the study was done for buildings with a height equal to or more than 45 meters.

### 6. RESEARCH METHODOLOGY

1. Literature Study: Understanding Real Estate Market Scenario of Ahmedabad and review of related research papers.
2. Data Collection: Questionnaire survey of current residents, property buyers and developers along with land costs data.
3. Financial Model: Financial model for 7, 14, 22 and 35 storey building for east and west Ahmedabad.
4. Data Analysis: Analysis of collected data.
5. Conclusion: Impacts of high-rise buildings.

### 7.0 LITERATURE REVIEW

For the selected research topic, the literature review includes: a background and facts about the demographics and urbanization of Ahmedabad city along with Gujarat and India; the commercial and residential real estate market scenario of Ahmedabad city; understanding the CGDCR norms for buildings with a height of more than 45 meters and a study of the upcoming tall building policy of Ahmedabad city. Along with these, literature such as news articles, research papers, thesis, etc. is also done.

### 8. DATA COLLECTION

Property buyers and developers survey was inevitable to understand the demand for and opinions on high-rise buildings in the city of Ahmedabad. Both consumers and developers play an important role in the real estate market, as consumers will have their own demands for purchasing a property, and to full fill these demands, it is important to know the perspective of developers. The data collection for this research includes surveys from property buyers, current residents of high-rise buildings, and developers; land costs of areas selected for research; and construction costs to develop the financial model.

#### 8.1 Current Residents of High-rise Building Survey

Questionnaires were formed for current residents of high-rise buildings, property buyers, and developers respectively. The questionnaire survey for current residents of high-rise buildings was done to understand their opinions about living in a high-rise building. The sample size considered for this survey was 50. The respondents for this survey were the people who are currently living in a building with more than 10 floors. The questionnaire included the background of the respondent, details of the building, and preferences for living in a high-rise building. As per the survey, the majority of respondents live in a high-rise building, and will also suggest other people to live in a high-rise building.

#### 8.2 Property Buyers Survey

The questionnaire survey for property buyers was done to understand their opinions on buying property in a high-rise building with more than or equal to 45 meters. This will help to understand the demand for high-rise buildings in the city. The sample size derived

for this survey was 50 and was carried out by the purposive sampling method. The questionnaire included the background of the respondent and preference for buying a property.

### 8.3 Developers Survey

The questionnaire survey for developers was done to understand the developer's perspective on developing high-rise buildings in the city. The sample size for this survey was assumed as 15 due to the limited number of developers developing high-rise buildings in the city. The questionnaire included the background of the developer and perspective on high-rise buildings.

### 8.4 Land Costs

Land costs were collected as a part of data collection. For land costs, the areas selected are Jagatpur, Gota, Bopal Ambli Road, Nikol, Shela, and Zundal. These areas have the highest number of high-rise buildings, and more high-rise buildings are under construction in this area, and more open plots are available for construction, hence these areas are selected. Moreover, the TP schemes for these areas consist of more roads of 18, 30, and 45 meters width which can lead to more high-rise buildings. The land costs were collected from the plots having an abutting road width of more than 18 meters due to height restrictions as per the CGDCR.

## 9. FINANCIAL MODEL

The financial model was prepared in the following steps; land information & FSI calculation - this includes the information of land and FSI calculation available on the given plot as per CGDCR; construction costs - this includes the derivation of per-unit construction costs for 7, 14, 22 and 35 floors which includes civil works and consultant charges; summary table - this consists of the per square foot land cost, construction cost, selling cost and profit, total project cost and cost of an average 3 BHK apartment. The financial model was classified for East and West Ahmedabad. For this research the area selected for West Ahmedabad was Jagatpur and the area selected for East Ahmedabad was Nikol.

## 10. DATA ANALYSIS

### 10.1 Current Residents of High-rise Building Survey

The majority of the respondents live in West Ahmedabad in a building with 10-14 floors. Most of them own 3 BHK apartments. The age of buildings ranges from 0 to 20 years and more, with the majority being between 0 and 5 years. It is observed from the data collected that residents with 3 BHK & 4 BHK+ apartments and buildings having age less than 10 years have the maximum maintenance cost due to more area and amenities, respectively. Almost all respondents enjoy living in a high-rise building and will also suggest others to live in a high-rise building.

### 10.2 Property Buyers Survey

#### *First-level Analysis:*

Among all the respondents, the majority of them are willing to purchase a property in a high-rise building with more than or equal to 45 meters. The majority of them are more inclined to purchase an apartment/penthouse in a building with more than 35 floors in West Ahmedabad.

#### *Second-level Analysis:*

Among 50 respondents, 11, 9 and 15 respondents are willing to purchase a 3 BHK/4 BHK+ apartment in a building with >14 floors, >22 floors, and >35 floors respectively. The budget of these buyers varies from Rs. 51 lakhs to Rs. 1.5 crore and more.

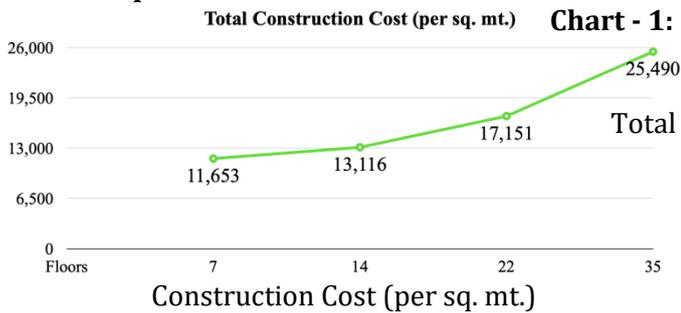
#### *Third-level Analysis:*

Among the 50 buyers, 35 of them are willing to purchase a 3 BHK/4 BHK+ apartment/penthouse either in West Ahmedabad or East Ahmedabad. The majority of 3 BHK apartment buyers have a budget of Rs. 76 lakhs to Rs. 1 crore.

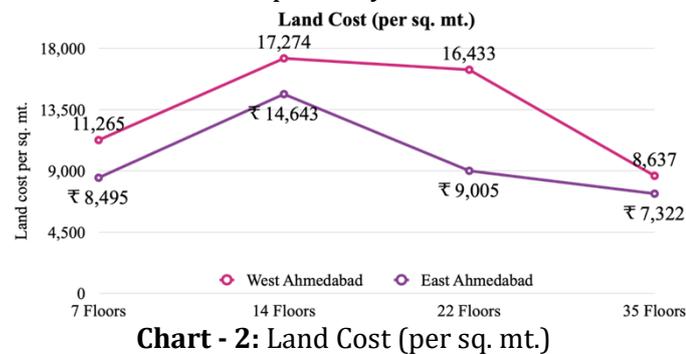
### 10.3 Developers Survey

From the developer's survey, most of them are willing to develop buildings with more than 35 floors due to increased FSI and prefer West Ahmedabad for the development of such projects due to better project viability. The preferred cost of a 3 BHK apartment in a building with more than 35-floors by the buyers is satisfied by the cost suggested by the developers and derived from the financial model.

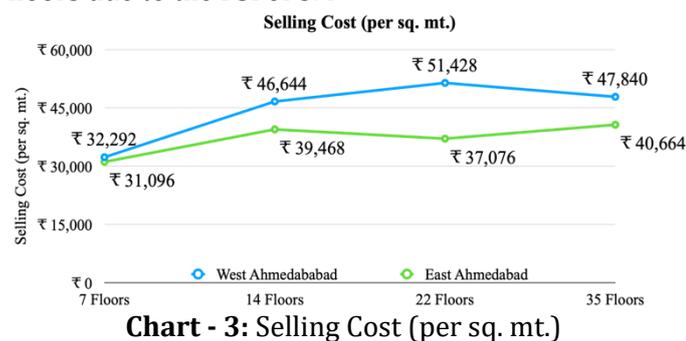
### 10.4 Comparison of Financial Model



The total construction cost per square feet of 7, 14, & 22 floors is compared to that of 35 floors. The total construction cost per square feet increases by 119%, 94% & 49% for 35 floors compared to 7 floors, 14 floors & 22 floors respectively.



The per-unit land cost is calculated by dividing the total land cost by the total built-up area. The per-unit shown in the above chart is for West Ahmedabad (Jagatpur Area) and East Ahmedabad (Nikol Area) for 7, 14, 22, and 35 floors. The per-unit land cost decreases as the FSI increases as the built-up area of the project increases. Hence the per unit land cost is lowest for 35 floors due to the FSI of 5.4



The per-unit selling costs for both West Ahmedabad (Jagatpur Area) and East Ahmedabad (Nikol Area) are identified by the current market rates in the given areas. For 35 floors, the selling cost was considered hypothetically as the 35-story building project is considered on the same land as the 14-story project, so

there will not be a significant change in the per unit selling cost.

### 11. CONCLUSION

The research concluded that people are willing to buy a property in a building with a height of more than or equal to 45 meters. Among them, the majority of people are willing to purchase a property in a building with a height of more than 100 meters. This clearly shows there will be a demand for a high-rise building in the near future. As per the discussion with the developers, and seeing the current market demand for high-rise buildings with more than 100 meters, the land prices will increase eventually as soon as the tall building policy is implemented, because the allowance of FSI of 5.4 will help developers to construct almost double the built-up area compared to the built-up area allowed for 14 floors now on the same land parcel and will allow developers to gain nearly double the profit. Hence, land costs will increase in the near future. There will be minimal change in property prices in 14 and 35 storey buildings, so there will not be any financial benefit to the buyers. But due to high-rise buildings, the building footprints will be reduced significantly, which will lead to more open green spaces and more amenities, hence an increased standard of living. As per the research carried out, it can be stated that the upcoming tall building policy will have a major impact on Ahmedabad's real estate sector and will be a major success in the city.

### REFERENCES

- [1] World Urbanization Prospects: The 2018 Revision. (2018). Department of Economic and Social Affairs, Population Division. United Nations.
- [2] Census of India. (2011). DISTRICT CENSUS HANDBOOK AHMADABAD. Directorate of Census Operations, Gujarat. Ahmedabad : Census of India.
- [3] Directorate of Census Operations, G. (2011). Census of India. Ahmedabad: Directorate of Census Operations, Gujarat .
- [4] Haritas, B. (2017, June 28). Richest Cities Of India. Retrieved from bussinessworld.in: <http://www.businessworld.in/article/Richest-Cities-Of-India/28-06-2017-121011/>
- [5] Knight Frank Research. (2020). India Real Estate Residential & Office - July - December 2020. Knight Frank Research.

- [6] Magicbricks. (2021). Propindex India Residential Market Index and Overview - Ahmedabad. Ahmedabad: Magicbricks Research.
- [7] Urban Development & Urban Housing Department. (2017). COMPREHENSIVE GENERAL DEVELOPMENT CONTROL REGULATIONS -2017 (Vols. 2 - Planning Regulations). Gandhinagar, Gujarat , India: Urban Development & Urban Housing Department.
- [8] (2014). Retrieved from indiamaponline.com: <http://www.indiamaponline.com/city-map/gujrat/ahmedabad.html>
- [9] Nair, A., & Varghese, S. (2020, August 22). Explained: Why Gujarat is allowing buildings 100 metre tall in five cities. Retrieved from The Indian Express: <https://indianexpress.com/article/explained/why-gujarat-is-allowing-buildings-100-m-tall-and-what-it-takes-to-build-one-6563407/>
- [10] Patel, B., Byahut, S., & Bhatha, B. (2018). Building regulations are a barrier to affordable housing in Indian cities: the case of Ahmedabad. *Journal of Housing and the Built Environment*(33), 175-195.
- [11] Ibrahim, E. (2007). High-Rise Buildings - Needs and Impacts. CIB World Building Congress, 11.
- [12] DEPARTMENT, U. D. (2020, August 18). NOTIFICATION NO. GH/V/110 OF 2020/ TPS-142020-1100-L. Gandhinagar, Gujarat, India: Government of Gujarat.
- [13] Revenue Department of Gujarat. (2011, April 18). Jantri Rates - Jagatpur - Draft Submitted T.P.S. No. - 34. Ahmedabad, Gujarat, India: Superintendent of Stamps.
- [14] Revenue Department of Gujarat. (2011, April 18). Jantri Rates - Jagatpur - Draft Submitted T.P.S. No. - 35. Ahmedabad, Gujarat, India: Superintendent of Stamps.
- [15] Revenue Department of Gujarat. (2011, April 18). Jantri Rates - Chenpur - Jagatpur - Tragad - Chandkheda - Draft Submitted T.P.S. No. - 65. Ahmedabad, Gujarat, India: Superintendent of Stamps.
- [16] Revenue Department of Gujarat . (2011, April 4). Jantri Rates - Nikol - Draft Submitted T.P.S. - 101. Ahmedabad , Gujarat , India: Superintendent of Stamps.
- [17] Revenue Department of Gujarat . (2011, April 18). Jantri Rates - Nikol - Draft Submitted T.P.S. No. - 102. Ahmedabad , Gujarat , India: Superintendent of Stamps.
- [18] Revenue Department of Gujarat. (2011, April 18). Jantri Rates - Muthiya - Hanspura - Bilasiya - Draft Submitted - T.P.S. No. - 109. Ahmedabad , Gujarat , India: Superintendent of Stamps.