STUDY ON THE ASSESSMENT OF VERTICAL DEVELOPMENT FOR SURAT & MUMBAI

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Abstract: Land is most valuable resource for the development of urban area. Without land parcel growth cannot be accommodate. Currently Surat city expands horizontally and due to this there is limitation of city expansion in horizontal direction which creates an urban sprawl. Maximum land use is covered by residential land parcel, for that optimum use of urban land is required and this will be achieved by vertical development only. By applying concept of vertical development remaining portion of land use can be utilise for public purpose. It will directly improve health of community. Vertical development comprise high-density on an optimum land parcel. When development of any urban area takes place using lower floor space index (F.S.I.) causes horizontal expansion of city. For that higher F.S.I. can be used as an effective tool and provision of strong road network with appropriate carrying capacity also can reduce traffic congestion. Attempt has made to use optimal land to accommodate high density.

Index Terms: F.S.I., Vertical Development, Vertical Expansion
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I. INTRODUCTION

The growth of world population and its concentration in cities leads to excessive occupation of the ground by constructions. The issue of land deficiency might be utilized to extraordinary preferred standpoint. As urban areas are compelled to go vertical, smaller urban areas empower more offices and courtesies to be situated close homes and help mass travel frameworks turn out to be more practical. In the event that all around identified with arrive utilize design, mass travel can move many individuals rapidly, spare travel time and vitality, reduce street blockage, and enhance the personal satisfaction of numerous people. It would then create the impression that vertical urban areas are a decent approach.

However, governments and experts subjects need to make a decent attempt to influence the city to work effectively while outlining an excellent and liveable vertical urban condition. The arrangement can be made in the advancement of inhabitant masses through actualising the hypothesis of a Vertical City that is high capacity, high ability ultra-high structures involving a moderately minor car free, pedestrian-friendly piece of land. Within this footprint are all the self-sustaining features of infrastructure, buildings, facilities, and services essential for improving the living, working, cultural, entertainment, sports, recreation, and leisure potentials of life for inhabitants.

II. SURAT CITY PROFILE

Surat today is known for its thriving world famous diamond industry and textile industry. It is developing quickly as individuals from everywhere throughout the nation a beeline to this remarkable metropolitan with a changeable past. Once known as Surya, the city is today the second biggest in Gujarat, situated on the banks of the Tapti River. The old city has limit roads, verifiable houses and around it the extending cityscape is specked with present day structures and mechanical regions. It is the textiles capital of the state, if not the nation. Surat is presently deliberated as a Mega City of India.

Around 92% of the diamonds in the world are handled here in a huge number of minor and major diamond preparing units, making it the Antwerp of the East. Surat at 58% has the uppermost percentage of migrant residents in India. The number of inhabitants in Surat City was 44.62 lakh (according to Census 2011), which implies that migrants contain just about 26% of the populace, as indicated by the report 'Social Inclusion of Illegal Migrants in India'. The level of migrant populace is 43% for Mumbai and Delhi. Because of quick industrialization, with the foundation of huge businesses, for example, KRIBHCO, L&T, ESSAR, NTPC, Reliance Industries etc., notwithstanding the ordinary advancement of the conventional textile industries, diamond ventures and development activities, Surat has turned into an imperative development magnet for the migrants. Current investigations uncover that relatively every second household of Surat is a migrant..

III. CONCEPT OF VERTICAL DEVELOPMENT

"Vertical development consist of high-density skyscrapers, which leave at least 85% of the ground free for open space and other recreational facilities; an elaborate but well-coordinated system of vertical transportation comprising elevators that serve as superhighways, subways, access roads and pedestrian walks; as well as a very large population of people who work and live within the skyscrapers.'' (Le Corbusier, 1946, 1947).

Vertical development is an urban development process, initially characterized by changes in the urban landscape is perceived. Vertically as opposite of horizontal points towards a visual perception change. The cityscape gets more vertical Trains, it becomes more profiled and dynamic. Verticalization therefore means the increasing Construction of towers, those tall houses that stand out over conventional buildings.
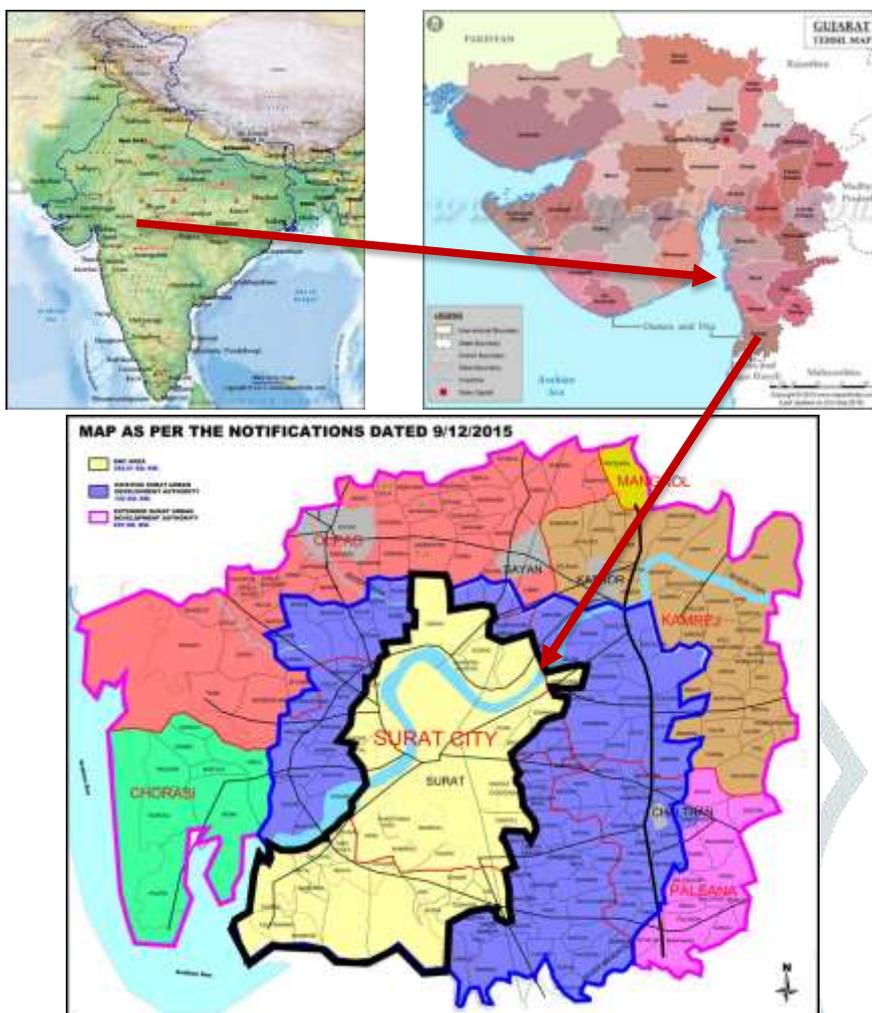
Figure 1 Location of   **study area**
(Source: Maps of India, 2017)

The vertical development process continues to be affected by changes in urban morphology to perceive: vertical area have a higher building density and resident density on such urban morphological changes usually cause urban structural changes. An unscheduled verticalization works Negative on the city structure: The traffic flow is impaired (it arises Congestion), the location of commercial facilities is changing (economic losses or neighborly incompatibilities), the demand for parking spaces is increasing (Parking space lack), the existing sewage system (water and sewage) is overloaded etc.

This public was developed with the idea of life as a focus from the inception of the design process. Great importance was fixed on wisely balancing and integrating inhabited, social, commercial, recreational, realistic and formal features of master plan. A universal method to both micro and macro institute remained seen as being critical to this ultra-livable city.

IV. NEED OF VERTICAL DEVELOPMENT IN SURAT CITY

Figure 2 shows the city limit extension year wise. In 1951 area of the city was only 8.18 km2, today that area is known as old city. After that city limit was extended gradually. The major extension was made in July 2006 in which city limit was extended up to 326.515 km2.
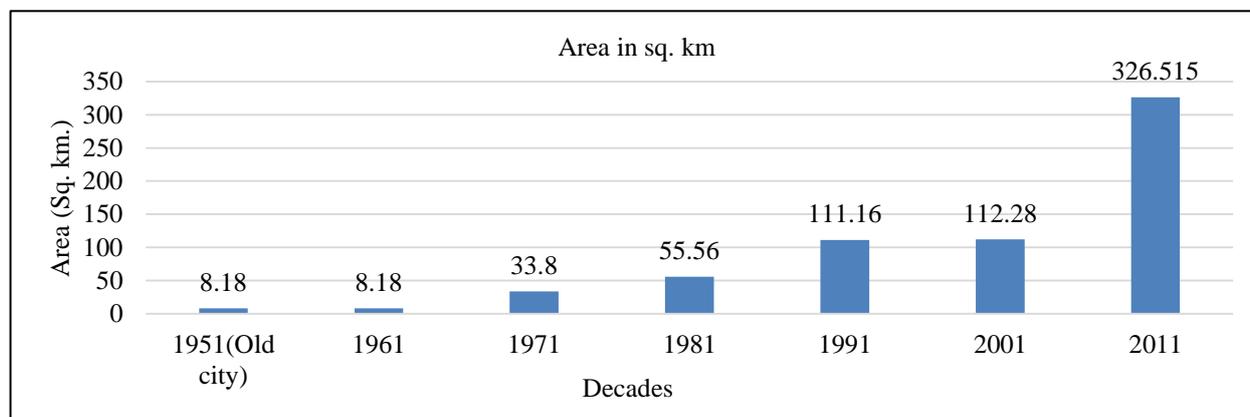

Figure 2 City limit extension area
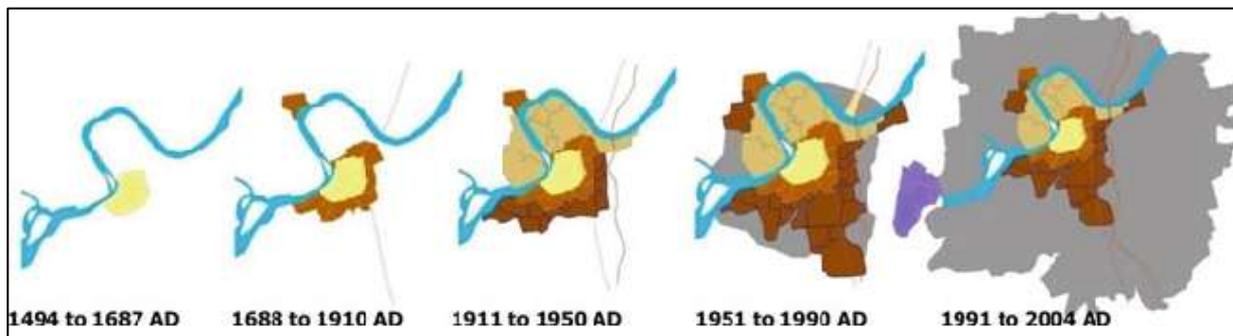(Source: Surat Municipal Corporation, 2015)

Figure 3 Expansion of Surat City

Table 1 shows number of high rise structures in Surat city. Maximum number of high rise buildings are in South West Zone as Surat Municipal Corporation (2006).

Table 1: Details of High rise building in Surat city

Sr. No.	Zone	No. of High Rise Buildings
1	South Zone	9
2	North Zone	32
3	East Zone	51
4	South East Zone	58
5	Central Zone	122
6	West Zone	264
7	South West Zone	468

(Source: Surat Municipal Corporation, 2006)

V. MUMBAI, INDIA

More than 3000 tall structures have just been built in the Mumbai Metropolitan Region. It is the city with the eleventh most number of high rises in the world. Most high rises in Mumbai are private. Mumbai's land is among the most costly in the world. Partially, obviously, this is an effect of topographical features - the city is restricted by natural boundaries of sea, hills and marshland. It is because of destabilisation of the property market by well linked builders. But, primarily it is an elements of theatrically controlled source. Mumbai has dependably been the most vertical of India's urban communities; and it have to maybe more vertical still, with a specific end goal to help facilitate its gaping deficiency in floor space. Mumbai today has less square meters of floor space accessible per occupant than all other real world urban communities.

A more vertical city would not only ease that constraint, but also make commuting in Mumbai less of a nightmare; today, due to the absence of accessibility of lodging units near their working environments, Mumbai's inhabitants have among the longest normal travel times in the world. It, therefore, could be claimed that the ministry of environment and forests must look positively upon the Maharashtra government's claim that it ease certain confinements on vertical building that it has forced. Specifically, the MoEF requires the tallness of a working to be connected to the width of a street - for instance, a 60-meter high building must be on a 30-meter wide street. A few urban areas, similar to Delhi, may figure out how to extend all the more on a level plane. Others, similar to Mumbai, may need to go vertical. There is nobody measure fits-all technique. The centre could outline show rules on such issues, however ought to preferably enable the neighbourhood specialists to take a more considered view contingent upon particular conditions on the ground.

Table 2 Population scenario of Mumbai

Year	Total population
1951	29,94,444
1961	41,52,056
1971	59,70,575
1981	82,43,405
1991	99,25,891
2001	119,14,398
2011	124,78,447

(Source- MMRDA and Census of India, 2011)

VI. VERTICAL DEVELOPMENT IN MUMBAI

The BMC has topped FSI at 5. The FSI took into consideration development of plots by Maharashtra Housing and Development Authority (MHADA) has been expanded from the current 3 to 4, however stays unaltered at 3 for redevelopment of cessed structures in Mumbai. The development of hotels on free terrains has been made 5 FSI – this prior relied upon the stars of the hotel and went between FSI of 3 to 5.

The TOD approach, whatever faced objections originating at experts and citizens' groups archaic scrapped. Under TOD, the communal material suggested too FSI for buildings close to line stations or transit-heavy areas. It was redoubtable the TOD viands would bring about rubber-necking in areas such a person prefer SV Road and the westernmost suburbs. The communal group has still marked the FSI for situation   of   presidency and native plots   for   offices coming   out   of   in   advance 4   to   5   FSI   and for presidency and public personnel cabin antiquated elevated to 4.

Table 3 Top ten Tallest building in Mumbai

Sr. No.	Name of building	Height	Floors	Year
01	Imperial Tower	254 m (833 ft)	61	2010
02	One Avighna Park	251 m (823 ft)	60	2017
03	Ahuja Tower	250 m (820 ft)	53	2014
04	Nirvana Tower	250 m (820 ft)	61	2016
05	L&T Crescent	245 m (804 ft)	64	2017
06	Indiabulls Sky	240 m (787 ft)	48	2016
07	Lodha Fiorenza	225 m (738 ft)	62	2015
08	World Crest	223 m (732 ft)	57	2014
09	Lodha Bellissimo	222 m (728 ft)	53	2012
10	Orchid Enclave	210 m (689 ft)	52	2013

(Source- Skyscraper city, MMRDA, 2017)

VII. CONCLUDING REMARKS

Horizontal expansion of human populations away from central urban areas into low density cause urban sprawl. As the economy has rapidly increasing, the lack of land availability is becoming the major crisis in developing cities. The scarcity of land, high land values and population pressure has caused building development to grow vertically. Vertical development fulfils the need of balance between existing available resources and user requirements.

ACKNOWLEDGEMENT

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