*International Research Journal of Social Sciences*_____E-ISSN 2319–3565
Vol. **5(3),** 67-73, March **(2016)** *Int. Res. J. Social Sci.*

Land use Planning in Cities: Making Affordable Housing and Prosperous Cities – Case Study of Satellite Towns of Delhi (Noida and Gurgaon), India

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Available online at: www.isca.in, www.isca.me
Received 31st January 2016, revised 14th February 2016, accepted 12th March 2016

Abstract

Land use planning is a method for sustainable, well planned and controlled growth in a region. Master plan is a draft to control the expansion and growth within a city. It is the allocation of the valuable land resource to different uses as per the population's demand. This is achieved by various regulations called as Zoning Regulations. Land Regulations affects the price of land in a number of ways. In some cases the affect can be a direct one and in some cases it can be indirect. In the present, it is observed that land regulations invariably increases the land rate while in some cases, certain regulations tend to generate a positive effect by decreasing land value. The paper discusses about the Master Plans of the recently urbanized satellite towns of the National Capital, Noida and Gurgaon. A major part of the paper focuses on evaluating the real estate market of the towns. Both the urban centres are subjected to unprecedented growth since the last decade.

Keywords: Land Use Planning, Noida, Gurgaon, Master Plan, Affordable Housing, Urban Sprawl.

Introduction

Noida and Gurgaon were established as a result to decentralize the migrating population and industrial activities from the primate city- Delhi. The urban centre was unable to accommodate the huge population growth and also there was an urge to decentralize the industries within the city, hence both the satellite towns were evolved to act as a counter magnet to this unrestrained growth.

Objectives: i. Critically Analyzing the Master Plan 2031 of Noida and Gurgaon. ii. Analyzing the effect of certain Zoning Regulations and Land Use Policies on the price of land. iii. Observing the trend of Affordable housing in the Satellite towns of Delhi (Noida and Gurgaon) and comparing them to that of Navi Mumbai, a satellite town of Mumbai. iv. To understand the causes of high land value, insufficient housing and stagnant land market in Noida and Gurgaon.

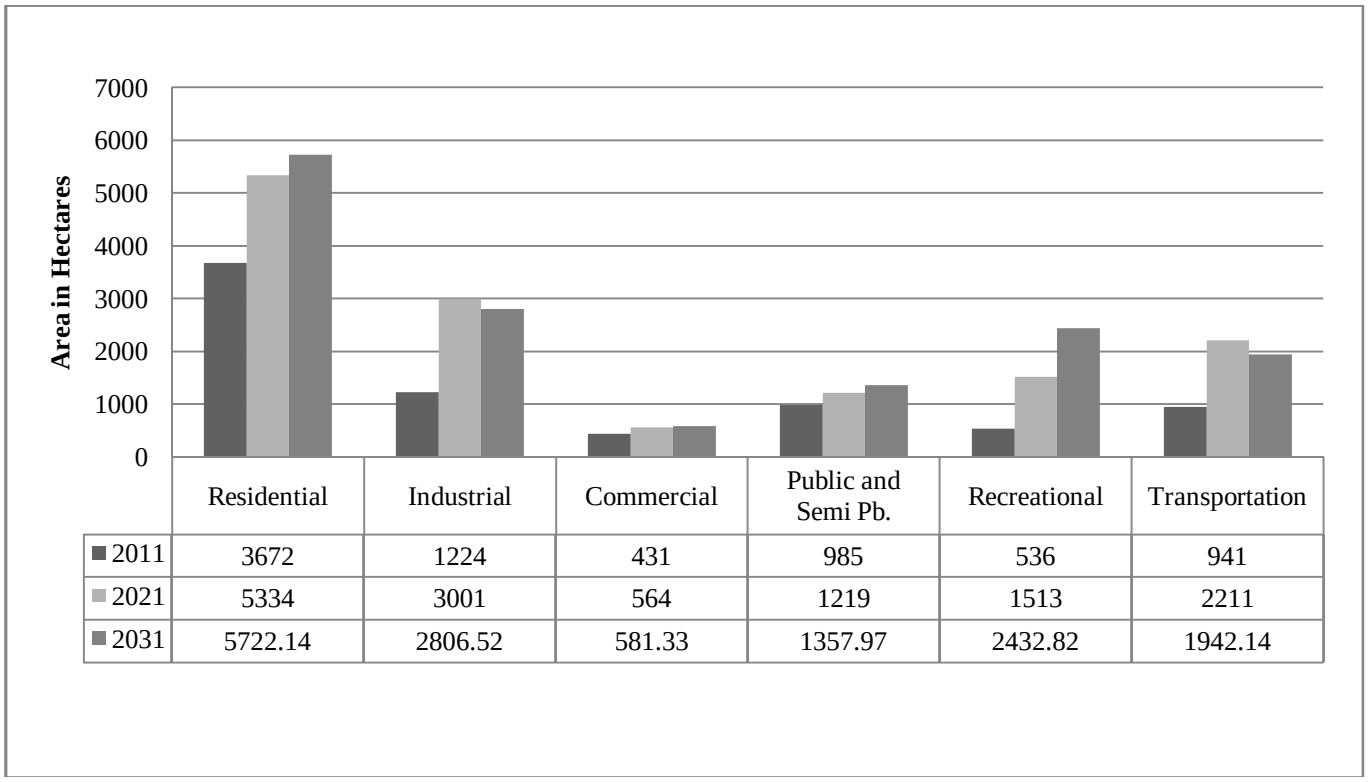
Methodology

Literature Research: Articles and Reports on the Land use planning in Noida and Gurgaon were consulted. Also, report on Affordable Housing by HDFC was studied to understand the concept of Affordable Housing.

Data Collection: For analyzing the land use planning in the cities, the Master Plan – 2031[1] of Noida and the Master Plan - 2031[2] of Gurgaon- Manesar Complex, published by the Town and Country Planning Department was studied. Along with this, Building Regulations of Uttar Pradesh Government and Haryana Government were also examined. Furthermore, to study the trend of Property Prices, secondary data from the real estate websites was extracted and further analysis was done.

Methodology: i. For examining the land use planning in Noida and Gurgaon, the trend of allocation of land for various land uses was studied. Furthermore, the future land use planning objectives were compared to the existing developed land for various uses and on the basis of which the Concept of Master Plan was critically analyzed. ii. The project primarily focuses on the Affordable Housing in Noida and Gurgaon. So, the prices of the multistory apartments in both the satellite towns of Delhi were observed. This was compared to the prices of multistory apartments of the Satellite town of Mumbai, Navi Mumbai and further conclusions were derived.

Salient Feature of Land Use Planning in Noida: After analyzing the Master Plan of Noida (2011-2031), published by NOIDA Authority it can be discerned that the government has controlled the expansion in the city by well executing the master plans. In Noida, in 2011, 7789 Hectares of Land was proposed for development. Out of the total proposed land, 47.14% was dedicated to the Residential Land Use and 15.7% for Industrial Development. In 2021, about 14,964 Hectares of Land is planned to be developed. Here we observe that the share of Residential land use, has decreased to 35.5% and the share of Industrial land use has increased to 20.05% of the total. In 2031, about 15,279 Hectares of land is to be dragged under the urban land use.



	Residential	Industrial	Commercial	Public and Semi Pb.	Recreational	Transportation
2011	3672	1224	431	985	536	941
2021	5334	3001	564	1219	1513	2211
2031	5722.14	2806.52	581.33	1357.97	2432.82	1942.14

Figure-1
Land-use in Noida (2011-2031)

But, if we look at the actual development by the end of 2010, then we can observe that the development authorities' effort in developing the land for urban land use is commendable. By 2010, 9,210.75 Hectares of Land was developed, which was more than the proposed framework. In Noida, by 2011, very few sectors were classified under High Density residential areas but in the successive master plans, a large number of sectors were converted to High Density Residential Areas so as to meet the housing demand of rapidly growing population.

Salient Feature of Land Use Planning in Gurgaon: In Case of Gurgaon, as per the data published by the Town and Country Planning Department, Government of Haryana[3] out of the total proposed 33,872 Hectare of Land, 16,021 Hectare of land is fixed for Residential land use. This would be used for the development of Group Housing, Multi-storey Apartments and Residential Plots. As per the report on the Town and Country Planning Department Website of Haryana Government, the expected population in Gurgaon will be around 42.50 Lakh. In order to serve this huge population, about 47.2% of land will be devoted to the residential land use.

Well, the city's source of income and growth is expansion and development of Industries. Hence, the master plan has granted about 4613 Hectares of land for industrial expansion, which accounts for about 13.6% of the total land. There is also expansion of Special Economic Zones. There has already been development of about 1246 Hectares of Industrial land. The further expansion is to support the well renowned automobile industries and Software industries. The major feature of 2031 Industrial expansion is that most of the industries are assigned a land use nearby the Manesar Industrial complex. For the expansion of commercial space, a land of about 1616 Hectares has been assigned. This accounts for about 4.77%. As per the Authority's report, this land will be used for the development of big shopping and commercial malls and also the corporate mall complexes. The Haryana Development Authority has already developed about 480 Hectares of land devoted to the commercial use. The commercial centres on an average accounts for about 3-6% of the total land use in the city. The main purpose of them is to serve the population's demand for daily-use items and also luxury goods. There has been a very strong effort from the authority's side to build up a strong transportation network within the city and also to facilitate smoother transportation to the surrounding urban centres. Well, for this purpose, a significant proportion of land has been devoted. For Transport and Communication 4428 Hectares of Land has been planned to develop. This accounts for 13.07%, which is a little less than Industrial land use. This will help in solving the inter-city and intra city traffic problems. A significant proportion of land is been proposed for open spaces. About 2928 Hectares of land which is approximately 8.6% is for open spaces. In the Haryana-Delhi state boundary about 135 Hectares of land is for the development of Bio-diversity Park. Open spaces will be used for the development of Green spaces around the city.

Zoning Regulations: Critical Evaluation

Master Plan: Critical Evaluation: The following are the criticism to the existing master plans: i. Due to master plan, work zones and the residential areas are segregated. So people need to commute to their work place and this adds to their cost of living. Furthermore, during a field visit to Noida, it was found that most of the people working in the biggest commercial area of Noida i.e., Sector 18, used to travel a large distance to reach their work place. ii. One of the biggest flaws of the master plan is its zoning and regulations primarily FAR and height of building. In both Noida and Gurgaon, Such as, the height of building is restricted to 3 or 4 floors which in turn decrease the value of building in relation to land value. Low density development results in making land scarce and also leads to urban sprawl. iii. There is shrinkage in the amount of land dedicated to a particular land use due to irregular and disproportionate distribution of land to various types of land uses.

In India, there are a number of poorly imposed land use regulations at the central, state and municipal level. All these regulations are poorly implemented and not regulated accordingly. These regulations have an adverse effect on the pricing of land and due to which people are forced to live in a comparatively smaller area and this is also why the pricing of land is more than the affordability and average income of the people.

By unnecessarily reducing the Floor Space Index, people get lesser space to sustain on. Also, this pushes the urban development to the peripheral area of the city and hence the incidence of urban sprawl and suburbanization increases.

Certainly one can observe the essence of corruption in real estate and land market. Due to various regulations the price of land goes unreasonably high and hence it gets unaffordable for the people. Due to high demand for residential and commercial space, corruption level tends to be higher, either in terms of Stamp duty charges or any other regulation.

The Floor Space Index in the Satellite Towns of Delhi: Floor Space Index (FSI), also known as Floor Area Ration can be defined as the proportion or ratio of the total floor area to the net space of the site. In India, it's rare to find any land use type with a FSI value above 2-3. In the old city centers the FSI is comparatively low. In cities such as Singapore, Tokyo, New York the FSI value is above 10. In Singapore it is above 12.

Problem of Low FSI Value: Due to Low FSI value, more land is required for constructing a floor space. This in turn leads to either lesser number of floors or more land area used for construction of a building. So, in the areas where the supply of land is scarce, low FSI results in further reduction of floor space area. The middle income group and economically weaker sections of the society are badly affected due to this. Even in the commercial area, this leads to decrease in productivity. This also leads to shift of population from the city centre (due to unavailability of space) to the suburban areas. Hence an increase in urban sprawl is observed.

Table-1
FSI values in Noida[4]

	Floor Area Ratio	Height (in Meters)
Residential House (Plot area from 100 to 1000 Sq. Meters)	150 (in Percentage) or 1.5	For 100 M^2 Area: 10 Meters Above 100 M^2: 15 Meters
Group Housing	2.0	No Limit

Table-2
FSI values in Gurgaon [5]

	Floor Area Ratio / FAR/FSI
Group Housing	1.75
Government Offices	1.50
Warehousing	0.75

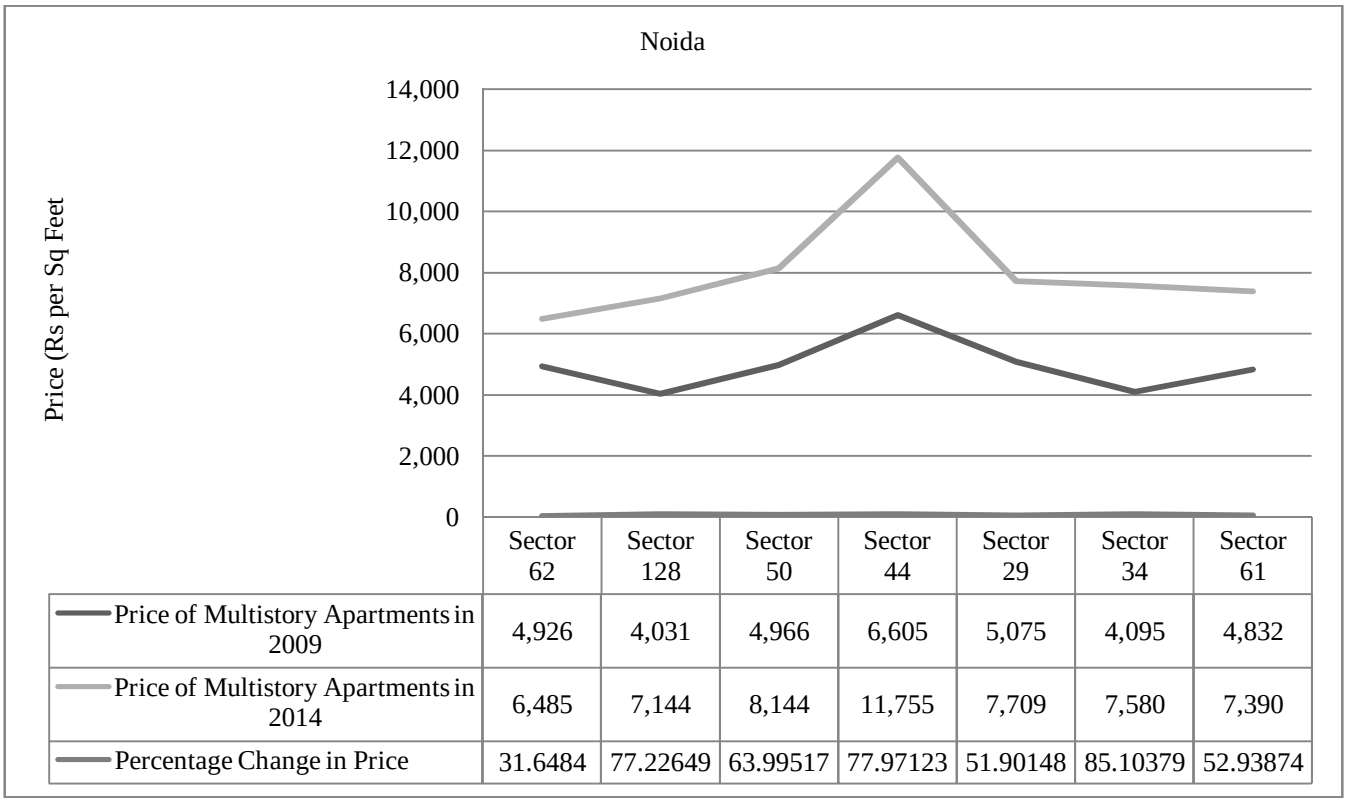
Slow Conversion of Land Use: A noteworthy barrier to the equitable land market is the slow and prolonged conversion of land use types. With the persistent demand of the industrial, institutional and residential land, patches of agricultural land are converted to non-agricultural types. It has been discerned that this process is dragged-out and cumbersome. This makes the much needed supply of the land to the market sluggish and stagnant. The demand increases while the supply tends to be slower. Furthermore, the conversion of land incorporates a substantial amount of taxation, which further tends to increase the price of land. Even though a certain transmutation of land is divulged in the Master Plan, the enactment might be prolonged

Affordable Housing in Noida and Gurgaon: In simple terms, the affordable housing can be defined as a ratio to the income of the household to the price or rent of the house. This ratio varies accordingly for different sections of the society based on their economic status.

As per the Deepak Parekh Committee report in 2008 [6], for a family from Economically Weaker Section (EWS): a carpet area of 300 to 600 sq meters is considered as a minimum requirement with EMI or rent up to 30% of the income[6].

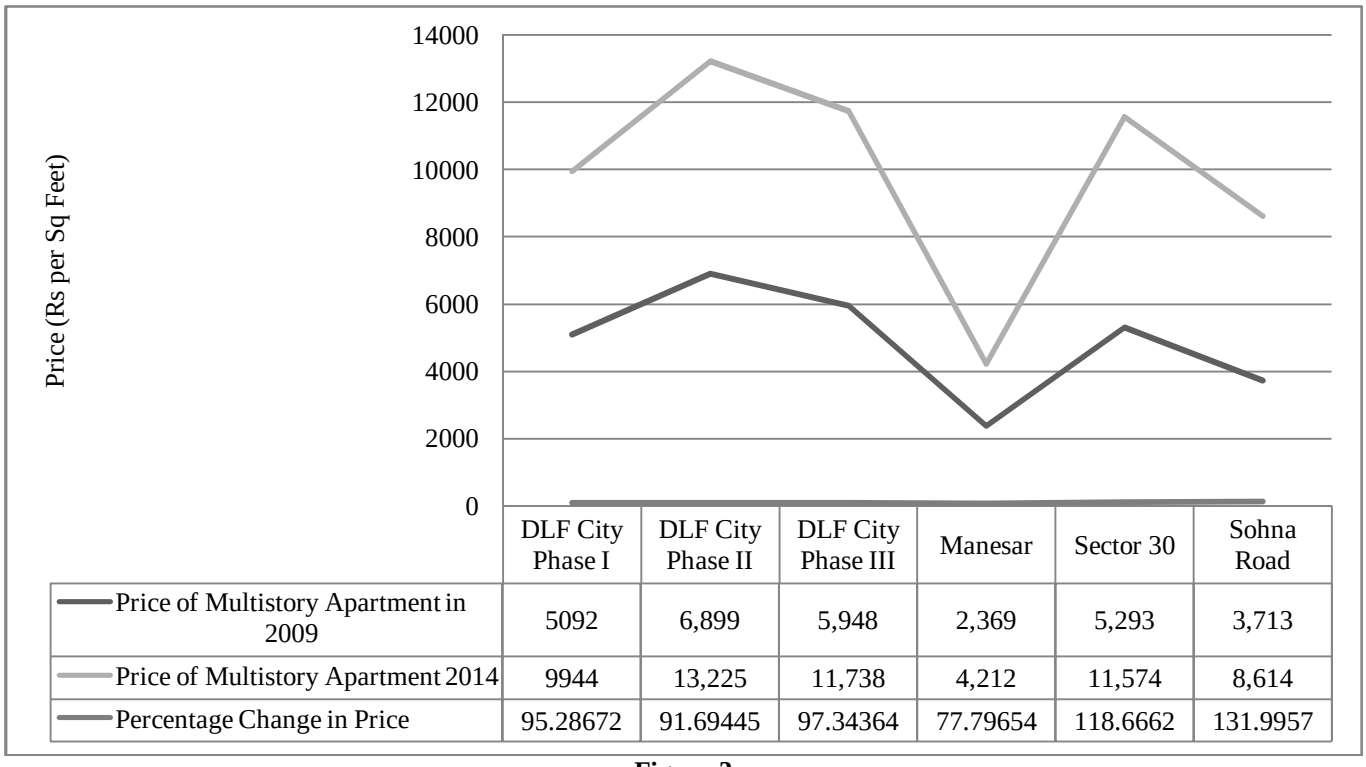
For a family from the Middle Income Group the space of up to "1200 Sq Meters with EMI or Rent up to 40% is a threshold requirement" [6].

With reference to the real estate websites, the rates of multistory apartments in a few localities of Noida and Gurgaon are as follows-



	Sector 62	Sector 128	Sector 50	Sector 44	Sector 29	Sector 34	Sector 61
Price of Multistory Apartments in 2009	4,926	4,031	4,966	6,605	5,075	4,095	4,832
Price of Multistory Apartments in 2014	6,485	7,144	8,144	11,755	7,709	7,580	7,390
Percentage Change in Price	31.6484	77.22649	63.99517	77.97123	51.90148	85.10379	52.93874

Figure-2
Land Price in Noida[7]



	DLF City Phase I	DLF City Phase II	DLF City Phase III	Manesar	Sector 30	Sohna Road
Price of Multistory Apartment in 2009	5092	6,899	5,948	2,369	5,293	3,713
Price of Multistory Apartment 2014	9944	13,225	11,738	4,212	11,574	8,614
Percentage Change in Price	95.28672	91.69445	97.34364	77.79654	118.6662	131.9957

Figure-3
Land Price in Gurgaon[8]

After looking at the rates of residential plot in various sectors of Noida and Gurgaon, it has been observed that in five years the rate has increased to a great extent. It is evident from the study that it is not possible for a middle or lower class person to buy a residential plot, because the individual will have to invest in construction, stamp duty and other taxes.

So, a multi-storey apartment will be more feasible and economical for an individual who cannot afford to invest much. Furthermore, group housing houses more people than any residential house. Hence the rates of multi-storey apartment in the Noida and Gurgaon were analyzed and the percentage change from 2009 to 2014 was calculated.

This trend was compared to another satellite town of Mumbai i.e. Navi Mumbai. The following observations were made: i. In the city of Noida, Sector 44 has the highest value for a multi-storey apartment. It is RS 11,755 per square feet. The area is catered by good connectivity and comparatively a better availability of market. The area has observed a 78% change in the land value. ii. One of the cheapest sectors is sector 62, which offers a multi-storey apartment at a rate of 6,485 RS per square feet. Sector 44 had the similar land value back in 2009. Most of the sectors had a land value in between 6,000 Rs to 12,000 Rs per square feet. iii. Now talking about Gurgaon, which had a rapid growth of tall residential buildings in the last decade. The availability of land is scarce in the main city while there is a little availability in the suburbs, which is under development.

Some sectors happen to have land rates of more than 20,000 Rs per square feet. iv. In Gurgaon, The most affordable sectors are sector 61 and 62 with a price range between 6,000- 6,500 Rs per square feet. Furthermore, the multi-storey apartments in Vatika City, DLF City Phase I and Sector 30, 31 are very costly with a value of Rs 10,000 to 12,500 per square feet.

This is very much unaffordable for the middle class people. v. Out of all the selected sample sectors in Noida, it can be observed that there is an average percent change of 50-80 in the city, with lowest in sector 62, which is comparatively affordable, and highest in sector 34 and 44. This rate of change is lesser as compared to the fast developing city Gurgaon, where we observe a rapid increase in prices. The rise in price is very high in Vatika City and DLF Cities.

Now we reach to the conclusion that in both the satellite towns of the capital, there is a huge housing demand which is leading to rapid increase in price. A better picture can be extracted by comparing these two satellite towns to the satellite town of Mumbai i.e. Navi Mumbai. Navi Mumbai is a fast developing satellite town in the proximity of the economic capital of the country, Mumbai. If a regular high land value trend is observed then the problem is common to all the fast developing towns or else this is exclusive to Noida and Gurgaon.

As per the data obtained various sources, it can be clearly inferred that Navi Mumbai, also, has acute land shortage, and in this scenario, multi-storey apartments are serving as a key housing complexes. The city has witnessed rapid growth due to large number of people migrating to Mumbai. Since Mumbai had housing shortage since 20th century, people are settling in the satellite towns and suburban areas of Mumbai. This is why Navi Mumbai has faced unprecedented growth. After observing the prices for multi-storey apartments, the following conclusions can be made: i. Most of the areas of Navi Mumbai offer a multi-storey apartment in the range of 5,000 to 14,500 Rs per square feet, which is higher than that of Noida. If we look at the change in prices in last five years, we observe a greater percentage change than that of Noida but comparatively equivalent or lesser than Gurgaon. ii. Greater increase in price is observed in Palam Beach and Sanpada area of Navi Mumbai. They have multi-storey apartment in the range of 12,000 to 14,000 Rs per square feet. While, New Panvel and Kalamboli are very cheap areas to settle in.

After clearly observing the price of the multi-storey apartments in Noida and Gurgaon, thereafter comparing them to the Navi Mumbai's trend, we observe that all the three satellite towns are very unaffordable. They all have soaring house prices and acute scarcity of land. This is because of the fact that these towns are in proximity to the major cities of India (Delhi and Mumbai). This increases their demand. And Due to far too high demand and poor supply, these towns suffers scarcity of land followed by inefficient and costly housing

After looking at thematic maps, obtained from the ISRO Bhuvan Satellite forum, it was discerned that the area nearby the capital was heavily populated and most of the (above 95%) was utilized for the Urban Land Use mainly housing and building infrastructures. Furthermore, as we move away from the Capital, we notice that most of the Haryana and Uttar Pradesh have agriculture land and are not as urbanized as Gurgaon and Noida.

There is a substantial effect of the Developed Metropolis on its suburban area. In this case, Delhi had a significant role in promoting growth in the satellite towns Noida and Gurgaon

Firstly New Delhi started to develop and had a massive influx of emigrant population. After a few decades, the horizontal expansion in Delhi started to cease and efforts were made for vertical expansion. Due to huge housing demand and influx of population, people started to move to the peripheral regions (Noida and Gurgaon). This leads to rapid suburbanization and urban sprawl. People started moving to the suburban areas. Slowly, the housing development in these regions started to increase which further increased the demand. With the better provision of basic public facilities and civic amenities, population in the satellite towns tends to increase and so the demand for housing which furthermore leads to an increase in the rates of land.

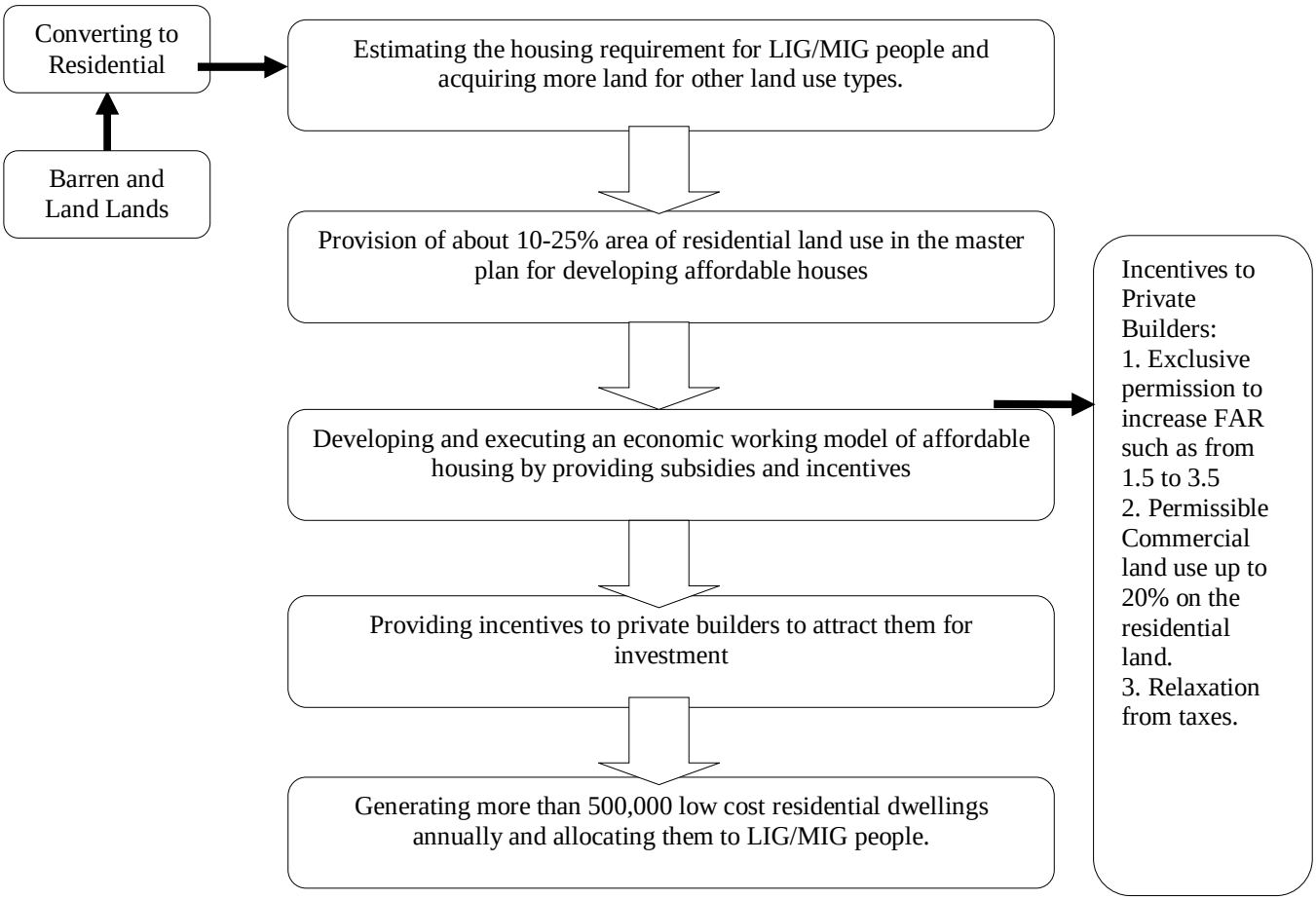


Figure-4
Affordable Housing Plan

Recommendations for the Affordable Housing Approach

The government should estimate the housing requirement for the people from the lower sections of the society. After the estimate, there is problem of availability of cheap land. This can be achieved by converting barren and waste lands to residential land. Furthermore, about 10-25% area of residential land use in the master plan should be converted to a new residential land use type, only accessible for low cost residential housing only to MIG and LIG groups.

Apart from this, for attracting the private builders, suitable incentives should be provided. One can be increasing the FAR value by 1 or 2 exclusively for private builders who invest in building low cost housing. Also, permission for commercial land use on about 15-25% of residential land should also be given, followed by Relaxation from certain taxes and duties. Suitable subsidies should also be provided by the government. Also, unviable slums can also be brought under residential land use. By this the government should aim to generate 500,000 Residential dwellings annually.

Revising Floor Area Ratio: The FAR needs to be revised accordingly so as to bring more floor space under the use. Well, this should be done in a way that too much congestion can also be prevented and efficient use of floor space is achieved. Such as it will provide more floor space to the residents than what they at present have.

Conclusion

In case of Affordable Housing, the Deepak Parekh Committee's report on Affordable Housing classifies and identifies the concept of affordable housing, as in for a person from EWS; a minimum of 300 to 600 sq feet of living area is required to sustain a better livelihood. In case of Middle Income Group, about 1200 Sq Feet of Area is required. But after looking at the market trends of land prices in Noida and Gurgaon it can be estimated that housing is highly unaffordable in these regions. After studying the zoning laws and the master plans, it can be concluded that the laws and policies have equal pros and cons. Such as, low ground coverage and low Floor Area Ratio Values are good in keeping congestion free and less crowded city but at the same time, due to low FAR values, there is poor utilization

of the floor space and this makes the land scarce, demand high, supply low and price high.

Also, as the city expands and develops, a number of population problems arises, such as proliferation of slums, ecological imbalance, cases of land acquisition, corruption in land market, environmental degradation and loss of vegetation cover.

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