

SATELLITE TOWNS

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Author Note

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Introduction

As the name suggests, satellite towns are based on the idea of a satellite (celestial body). They can be man-made (government established) or natural (self-established). A satellite is within the Earth's orbit and in this case, an urban center. A satellite town or satellite city is a concept in urban planning that refers to smaller metropolitan areas which are located somewhat near to but are mostly independent of larger metropolitan areas (Wikipedia).

A satellite city can be confused with other concepts of city development. For example, a common confusion occurs between “suburbs” and satellite cities. This happens because both are seen being near an urban center and have people commuting to and from. A satellite city is self-sufficient and has its own sturdy economic base, supplementing or complementing that of the urban center, whereas a suburb town is dependent upon the urban center for almost everything except for housing and garden. Another case is that of a satellite city which can act as a suburb and have a separate suburb for itself.

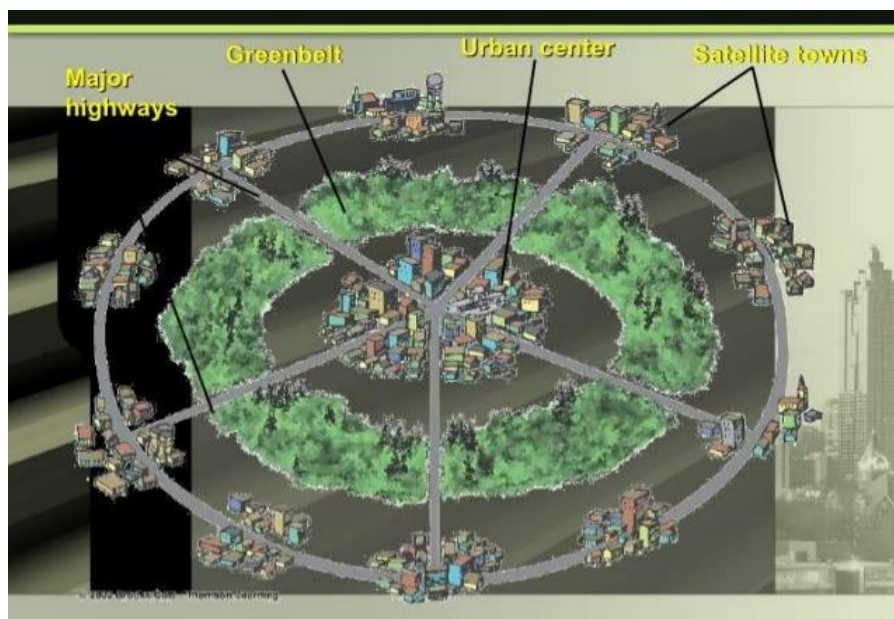


Figure 1. A diagram of Urban center and its connectivity. Source: Google Images

Satellite cities have a downtown, a distinct independent municipal government, existed as a city prior to becoming interconnected with the larger metropolitan core, and are surrounded by both, their own housing community and a belt of rural land between themselves and the central city (Wikipedia).

Why satellite towns

So why do we need satellite towns? The urban center around which these satellite towns are established experience uncontrolled growth of urban population. This happens due to the constant migration from rural to urban centers. Robert Neuwirth, journalist and author of “Shadow Cities: A billion squatters (2004)”, says statistics show that almost 130 people migrate to cities every minute. Larger the population, larger the demand for infrastructure facilities and amenities. Without adequate transportation means, lack of housing and shortage of land, the problem of managing these already strained centers increases.

The exponentially growing urban centers start to face strains on the delivery of services being provided. As the population grows, so does the cardinality of economic activities which take place in the center. So, we need to decentralize the activities to reduce the burden on these centers. Multiple satellite towns specializing in particular economic activities provide the much-needed relief to the urban centers. For example, Gurugram handles the IT industry load of Delhi, while NOIDA provides housing(primarily), IT, manufacturing etc.

How can satellite towns help

The growth of very large metropolitan regions led to the issues in urban town planning. In the late 20th century, the higher dense forms of cities were considered more sustainable as they were more efficient in terms of public transport and less dependent on automobiles. Gasoline consumption studies by Newman & Kenworthy (1989) support this argument.

But in most town planners agreed that decentralizing population concentration was a more promising approach. Decentralized approach ensures that general provisions needs do not require commuting to the central city while the presence of a strong public transit also ensures lesser reliance on automobiles (Haseeb, 2017, p. 13).

In the 20th century, Satellite towns were introduced and in Britain they represented the idea of the Garden Cities, as proposed by Ebenezer Howard. Satellite towns would provide urban facilities such as drinking water, sewerage, waste management and transportation to the urban center. Innovative Public Private Partnership models could fuel progress of the city at a faster rate and in a more efficient way. A satellite town will have its own local government and socio-economic hubs lowering the load on the parent city.

Satellite towns decongest and rejuvenate the urban centers and increase the living standards via improvements in infrastructure and basic amenities like water supply, sanitation and waste management. They can be used as test beds for new technologies and ideas to improve the management of cities. For ex, the introduction of smart cities incorporates several important satellite towns like Pimpri-Chinchwad, Bihar Sharif, New Town Kolkata etc. (The Hindu, 2016).

The following section is a part of a study done for the aim of this paper. The case study has been done on NOIDA, which has been a satellite town for more than forty years and now becoming an urban center on its own.

Case Study - NOIDA

New Okhla Industrial Development Authority

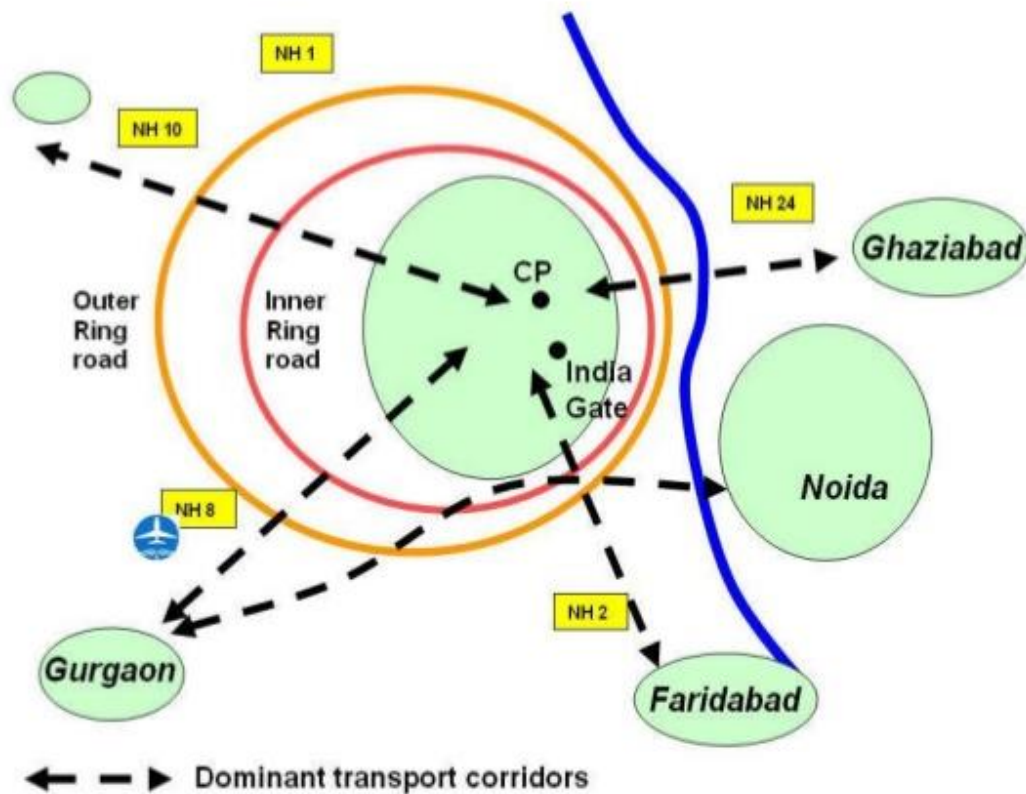


Figure 2. Rough map of NCR. Source: Google Images

With a population of 6.37 lac, according to the Census-2011, it is one of the most promising cities for the future. Some people say that NOIDA is an urban center and has its own satellite city, Greater Noida. But when one looks at the reasons of development of NOIDA back to 1972, one finds that it was a government established satellite town. To the east of Delhi and

across the Yamuna river, The U.P. Govt declared 50 villages of the erstwhile district of Bulandshahr as the "Yamuna-Hindon-Delhi Border Regulated Area" under U.P. Regulations of Building Operations Act, 1958. After discussion for about 4 years and 120 sq. Km, the U.P. Govt constituted an Industrial Development Authority for the first 36 villages of the said area under U.P. Industrial Area Development Act, 1976 (Master Plan-2001, 1979, p.6). The need, as specified in the original Master Plan (p.6), for establishing an industrial city in proximity of Delhi was primarily for the following reasons:

- ◆ Decentralisation of economic activities from the National Capital and thereby preventing the in-migration to Delhi and help in decongesting the Metropolis.
- ◆ Provide an alternative site for the small and medium size industries functioning in the non-conforming areas in and around Delhi at much lower price and at the same time at the doorstep of Delhi.
- ◆ Provide a reasonable and decent site for residential development within manageable distance from Delhi due to non-availability of land in Delhi at a reasonable price.

The administrative boundary was shaped automatically by a mix of both natural and man-made factors. The presence of industrial area in north-east, Hindon river in the east and Yamuna river in the south-west, the NOIDA township had only south-east direction to grow towards.

Master plans across years have also focused the developments in the same direction. Land use has been regulated to maintain the residential and eco-friendly atmosphere as envisioned.

Land Use Allocation (2001)

Land uses	Area (in Ha)	Percentage of Total developed area
Residential	1870.0	49.2
Industrial	495.0	13.0
Commercial	230.0	6.1
Public and Semi-Public	365.0	9.6
Transportation	495.0	13.0
Organize Open spaces	292.0	7.7
Unusable land-water bodies	53.0	1.4
Grand Total	3800.00	100.0

Source: Master Plan NOIDA-2001

As the name suggests, the initial development took place in the form of physical infrastructure for 1,000+ industrial sheds and plots in the year 1977. These were soon sold to budding entrepreneurs which formed the economic backbone of NOIDA and provided the much-needed employment for the years to come. To supplement this and concretize the town's development strategy, the authority sanctioned the construction of residential townships.

The Land Use pattern determines the size and structure of the city (Master Plan-2001, 1979, p. 10), but more importantly it provides the image for which the city is known. Created with an image as a town catering to small and medium sized industries and the work-force associated with them, the land use pattern of NOIDA was designed in the above manner. The revised Master Plan of 1983 expected 4,000+ industrial units (most will be small scale and medium scale) providing employment to 1 lac industrial workers in 2001. The authorities expected majority population to be migrants probably from Eastern UP, Bihar and Uttarakhand (erstwhile UP) and a projected population of 5.5 lacs by 2001. Being a migrant infused township, the initial household density was expected to be between 1 and 2.5 persons, which on attaining

maturity will be closer to 4.5 persons (Master Plan-2001,1979, p. 8). Areas having natural setting have been earmarked for residential sectors, close to the workplaces, community facilities and recreational areas like parks. The workplaces have been divided into three categories and arranged to make travel time of the majority workforce as minimum as possible. The three categories are – Industrial, Commercial and Government functions. Government functions are in the Town Centre (Sector-32) with three other sub-district centres in different parts of the city. The roads are laid out in a hierarchical system to provide efficient and spacious roads to cater to the traffic volume. The following sub-sections delve into more information about a few land uses mentioned in the table above.

Residential

Residential area has been given a 49.2 per cent of the total urban area, which accounts to 1,870 hectares. The residential area development is based on three overall density patterns -

1. High – 500 persons per hectare - Dormitory
2. Medium – 350 persons per hectare – Group Housing
3. Low – 200 persons per hectare – Plots Housing

The third entry gives the type of residential development that has taken place in the areas along with other social and physical infrastructural services like schools, parks, water supply, electricity, drainage etc. Secondary and Senior secondary schools have been set up in every Sector to provide a high-level and adequate education opportunities to prevent over competition like in Delhi. The construction of schools was not done in an ad-hoc manner, but instead in a very systematic and planned way. This argument is supported by construction of schools like Delhi Public School in Sector 30 and Noida Public School in Sector 23 in 1983. In a similar manner, day-cares and crèches are found dating back to 1990s. These were constructed to

provide the new generation of workforce, in which both spouses are working, to leave their children in a safe place during workhours.

Industrial

Industrial area has been allotted 13 per cent, which accounts to 495 hectares. The north-western boundary of the city, bordering with Delhi was planned for small scale industries like Furniture, Clothing, Electronic manufacturing etc. This comprises nearly 335 hectares of area carved into 4,546 plots. In the completely opposite cardinal direction, ie. on the south-eastern end of the initially selected 36 villages, around 160 hectares were planned for large scale industries like Polymer, Shoe, Cranes, Beverages etc. Major Sectors include Sector 1 – Sector 12 (Master Plan-2001, 1979, p. 11).

Commercial

Commercial activities constitute of the Town Centre and its sub-centres. They account to 6.1 percent, an area of 230 hectares. Activities like retail shopping, entertainment, professional offices, professional services are in a way that are easily accessible from roads and divided into three catchment area which reduce the travel in the city (Master Plan-2001, 1979, p. 11).

Transportation

Transportation accounts for another 13 per cent of the land use which is an area of 495 hectares. There are two Transport Nagars located at two different locations to minimise the through movement of heavy vehicles (Master Plan-2001, 1979, p. 10). The planning committee understood that urban functions generate demands for movement of people and knew that efficient movement of vehicles has an inverse relation with travel distances. That is, lower the travel distance from residential to workplace, the higher the efficient movement in the city.

Road pattern follows a hierarchical model (Master Plan-2001, 1979, p. 12):

1. Regional/Arterial roads – External roads providing links from NOIDA to Delhi and other towns of Uttar Pradesh. They form the arterial network for NOIDA as they pass through the city.
2. Primary roads – Major internal roads of township for intra-city movement
3. Secondary roads – Inter Sectoral roads
4. Local roads – Intra Sectoral roads

The width of the roads was decided based on the standard of life people were expected to lead and the estimated ownership of personal vehicles 30 years down the line. Arterial roads are generally 6 to 8 lane roads while Primary roads range from 4 to 6 lanes. Secondary roads are about 45 metres wide while the Local roads are 25-30 metres wide (Master Plan-2031, 2015, p. 24). To give an idea, the width of the main road inside each Sector in NOIDA is equal to the width of Infosys Avenue.



Figure 3. Map of NOIDA as per Master Plan-2001, 1979

Two years after the finalisation of the Master Plan-2001, the National Capital Region Planning Board (NCRPB) was formed, ie. in 1985. They created a statutory plan for NCR and enforced it in 1988 for the year 2001. The Delhi Development Authority also made a Perspective Plan for Delhi – 2001. NOIDA was given the status of a Delhi Metropolitan Area town according to the framework of the two plans (Master Plan-2031, 2015, p. 3). These plans and their execution proved fruitful for NOIDA. The construction of Delhi NOIDA Direct (DND) Flyway started and finished during the proposed plan’s timeline (The Tribune, 2001). This provided the much-needed connectivity between the Trans-Yamuna areas as population growth was the high on either side of the Yamuna river.

The Delhi Connection

Delhi has been instrumental in the development of NOIDA over the years and this is visible when we look at the economic indicator and factors like GDP, Income, migration etc. They help us identify how much NOIDA has had been dependent on Delhi and vice versa.

GDP

Gross Domestic Product has various definitions but the easiest refers to the market value of all commodities produced in a country in a financial year. We can understand the economic strength of NCR using the changes in trends of GDP. The NCR is emerging as a world-class region and one of the fastest growing economic regions (Master Plan-2031, 2015, p. 52).

Secondary and tertiary sector’s contribution has been going up since globalisation. The following table shows the district wise GDP of NCR at Constant Prices of 2004-05 from 2004-05 to 2009-10. Here Gautam Buddha Nagar is equivalent to NOIDA.

	Regions	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
S. No.		GDP (In Rs Millions)	GDP (In Rs Millions)	GDP (In Rs Millions)	GDP (In Rs Millions)	GDP (In RS Millions)	GDP (In Rs Millions)
1.1	Meerut	71760.6	81598.94	85739	91741	93859	101255
1.2	Bagpat	29072.7	28550.69	30676	32878	34721	38426
1.3	Gaziabad + Hapur	89271.38	97684.35	116073	124786	131284	136476
1.4	Gautambudha Nagar	73533.04	75276.19	117302	126290	131114	141557
1.5	Bulandshahr	68799.56	66288.34	74341	78725	83337	88740
1	Total of Uttar Pradesh Sub-region	332437.28	349398.51	424130	454420	474316	506453
2.1	Delhi	1003245.2	1104060.7	1240796	1379609	1557911	1698390
2	Total of Delhi Region	1003245	1104061	1240796	1379609	1557911	1698390

Source: Master Plan 2031 p. 53

On calculating the Year on Year (YoY) annual growth rate of GDP of NOIDA using the data above,

Year ->	2005-06	2006-07	2007-08	2008-09	2009-10
YoY growth	2.3 %	55.8 %	7.6 %	3.8 %	7.9 %

We see that there was a huge GDP growth in the year 2006-07 which is consistent with that of the whole country, which also experienced a GDP growth of 9.6 % (Open Government Data Platform). This growth came in the form of increase in Tertiary sector jobs as well as in construction activity in NOIDA extension (now Greater NOIDA) (Economic Times, 2008). The subsequent drop for two consecutive years was due to the global financial meltdown following the collapse of investment banks like Lehman brothers. This shows how NOIDA, via Delhi, indirectly connected to the global economy and got affected by it. The district-wise GDP data wasn't available beyond 2009-10, so further parallels couldn't be drawn.

Workforce

As per the 1991 Census, Workers comprised of 33 per cent of the population of the NOIDA urban area. The percentage increased to 34.90 per cent in 2001, reflecting the growth of economic opportunities. The table below shows the percentage of workers by various categories in NOIDA 1991 and 2001.

Category	1991	2001
Primary	11.65 %	2.64 %
Industrial	29.47 %	30.05 %
Service	31.01 %	33.51 %
Trade & Commerce	14.54 %	16.29 %
Construction	9.11 %	11.32 %
Transportation	4.22 %	6.28 %
TOTAL	100.00	100.00

We can conclude that in a span of one decade, all, except primary workers, increased their respective share in the employment market. The share of workforce participation in Delhi from the various sub-regions of NCR is shown in the table based on the Census of India, 2011 is:

Sub-region	%
Haryana sub-region	23.3
Uttar Pradesh sub-region	30.3
Rajasthan sub-region	10.9
Delhi region	35.5
TOTAL	100.00

This shows that after Delhi, the most per cent of workers in Delhi are from the Uttar Pradesh sub-region and it is safe to assume that a majority is from the adjoining city of NOIDA. The reason behind this is the low-cost of housing and ease of travel after the construction of various flyovers and completion of Phase 2 of the Metro rail projects before the Commonwealth Games XIX. Metro connectivity from Delhi to the Town Centre of NOIDA provided an important eco-friendly and low-cost option for the workforce to commute.

Housing & Transportation

This is the main constituent of the connection with Delhi. The high bureaucratic nature of Delhi is because it has two governments working – Central and State. This leads to a large requirement of workers to ensure their proper functioning. Delhi houses more than 860 (545+245+70) legislators who take up majority of the residential area of Lutyens. The rest belong to high post government officials like IAS, IPS etc. and embassies. This leads to lack of residential housing for lower tier employees across all government departments. They are given the option of taking up government quarters but a lot of employees with family can't sustain in them. This leads to them looking out for affordable residences near/around Delhi. They are provided with two options- NOIDA and Gurgaon. Gurgaon has costlier residences than NOIDA and the city caters only to the IT and heavy manufacturing industries. On the other hand, NOIDA has been providing reasonable cost housing with better facilities like water, sewage while the industrial part of the city caters to manufacturing general products and other commercial industries.

Another factor which affects the housing is the connectivity across cities. It has been found in a traffic survey that 80 per cent of the traffic falls along the various NOIDA-Delhi corridor, showing a strengthened relationship between NOIDA and Delhi. NOIDA is situated

across the Yamuna R. to Delhi while there is no such geographical feature between Gurgaon and Delhi. This led to Gurgaon being better connected via roads with Delhi before NOIDA. NOIDA was connected to Delhi only via the Nizamuddin bridge for most of its initial years. Later multiple links to Delhi made it more appealing to buyers looking for residences in NOIDA as it provided them with easier access to their workplace. Understanding the importance of NOIDA as a satellite town, many Public Sector Undertakings like NTPC (National Thermal Power Corporation) established residential clusters in NOIDA for their employees along with an outpost office (Sector 34). The construction of DND flyway in 15 months connecting NOIDA's Sector 15 with Delhi's Maharani Bagh was a major game changer in regulating and easing traffic between the two cities.

The XIX Commonwealth Games were hosted by Delhi in 2010. This was a way to show the world about India's capability to organise world-class events. This aim led to enormous infrastructural construction taking place year in, year out. Roads were re-constructed with special lane; beautiful cloverleaf intersections were constructed and the biggest of them all, the Metro rail construction. The Metro had begun operations under the second Atal Bihari Vajpayee government but was confined to certain areas of Delhi (DMRC website). The CWG provided an incentive to the State government to expand this Mass Rapid Transit System (MRTS). Delhi Metro Rail Corporation (DMRC) has spent millions of dollars to construct a 373 km with 271 stations in the past 24 years (DMRC website) in a phased model of development. The metro connectivity has had an enormous effect on the amount of road traffic and congestion across all the cities it touches. According to a survey by the DMRC, metro became the principal artery of public transport system of Delhi overtaking the Delhi Transport Corporation's (DTC) bus fleet. By the end of 2015, the daily ridership crossed 25 lacs, leading to a drop of 3.9 lac private vehicles on the roads and fatal road accidents. Along with reduction in vehicular pollution, the

carbon emission from the metro network was found to be the least compared to any other public transport (The Hindu, 2016).

The first metro line that was constructed across Delhi and NOIDA, joined the MRT's central station (Rajiv Chowk) to the latter's Town Centre (aptly named-NOIDA City Centre). The metro route had 6 stations in NOIDA, which were made along the original Road route to Delhi. The stations were along the tertiary sector areas and roads came perpendicular to the metro line from residential areas like Sector 19, 20, 21, 22, 25, 26, 29. The endpoint was the Town Centre of NOIDA which was easily accessible to and from all the residential and industrial areas. The authorities also constructed a parking lot for people who wish to use private vehicle to reach the metro station and use metro to travel the majority distance. These were the first steps towards the extraordinary connectivity that has since developed between NOIDA and Delhi. The metro is used by all sections of the society and all ages daily. This shift of the public transport load from buses helped the DTC too. This gave them time to improve their system. DTC brought in new low floor CNG buses and efficiently used them as long-distance travel as well last-mile connector from the metro stations. To an extent this system also transformed the inter-city and intra-city travel in NOIDA as well. The current version of the Delhi Metro provides easy access to the various commercial districts of Delhi, the railway stations, the airport and Lutyens Delhi.

One negative impact that happened due to this system was that the price of residential areas closer to the metro connectivity increased. But by connecting the shopping centre at Sector 18, they helped the economy of NOIDA get a huge boost. Inter-city tasks could now be completed at low cost and in lesser time.

Stepping towards self-sufficiency

The sudden pace of development in the previous decade took NOIDA from being a general manufacturing centre to an IT/ITES hub with companies like Paytm having their corporate headquarter in NOIDA's industrial centre. Software Technology Parks like HCL Technology Park, DLF IT Park and Oxygen Business Park have come up in recent years to cater to the growing office space requirements. This growth was not foreseen in the revised Master Plans. Below is a comparative analysis of land use which was proposed (for the year 2021) and the actual development that had taken place (by the year 2010) (Master Plan-2031, 2015, p. 18):

Land Use	Proposed Area (2021)	Actual development (2010)	% planned area
Residential	5334	3357.64	62.95
Commercial	564	101.89	18.06
Industrial	3001	1267.14	42.22
Institutional / Infrastructure	1219	813.28	66.72
Transportation	2211	1804.31	81.61
Recreational	1513	1761.98	116.45
Agriculture	1001	--	-
Water Body	121	104.5	86.36
TOTAL	14964	9210.74	61.61

The increase in workforce was seen during the last decade of the previous millennium and a high growth of population during the first decade of the new millennium led to the construction of a higher per cent of approved land to be developed under residential land use.

The development and construction of housing projects for industrial labour and group housing projects have been undertaken very seriously by the NOIDA Authority. The idea of keeping residential township closer to workplace was still followed and as the industrial construction (Sector 83, 84, 85) went to south eastern direction, so did the residential complexes (Sector 82, 92, 93). According to the latest Master Plan, the current number (in the year 2010) of housing plots can accommodate a population of 10 lac.

Though a great emphasis was given to residential development, industrial development also kept up with the same pace. Industrial development in NOIDA has followed a ‘phased’ approach. Phase I took place in the early 1980s followed by Phase II and NOIDA Export Processing Zone (NEPZ) in the later part of the decade (Master Plan-2031, 2015, p. 19). The development under Phase II, Phase III, NOIDA Special Economic Zone (NSEZ) went till the year 1998. Phase III was extended to incorporate more industrial land in the south eastern direction as mentioned above (Master Plan-2031, 2015, p. 20). Being close to Delhi, entrepreneurs and industrialists have chosen NOIDA as their favourite place in Uttar Pradesh for investment opportunities. NOIDA was ranked number one in industrial development in Uttar Pradesh in 2015 (India Today, 2016). It had the highest industry GDP per capita, second in the number of industrial workers employed and second position in proportion of industry in overall GDP.

Institutional development includes educational, health, government and social facilities. As mentioned earlier, each residential Sector was allotted plots for education and medical infrastructure. The NOIDA Authority has ensured that all villages under them provide educational facility to at least the Primary school level. Senior schools have been constructed based on population density in villages. The Mayawati government from 2007-12 ensured that

many Higher educational institutions are established to provide a strong skilled workforce for the future. Scores of engineering schools (most under Mahamaya Technical University), business schools (branch of IIM-Lucknow, Symbiosis), technical training schools and other prominent institutions utilise close to 493 hectares of the allotted area. Medical facilities cover 21.74 hectares of the land area. Private hospitals like Apollo to Government Post-Graduation Institute (PGI) hospitals are present catering to all sections of the society with world-class facilities. These large hospitals are supported by hundreds of nursing homes and clinics which people have established in their residences. The rural area currently has 35 community health centres, 2 maternity and child welfare centres along with few registered practitioners (Master Plan-2031, 2015, p. 23]. As per the Master plan-2031, till 2010, 813.28 hectares of land has been developed and used for institutional development. 493 hectares has been allotted to educational institutions, 19.67 hectares to Research and training facilities. Various national and state institutions have been allotted land near Town Centre and a whole Sector has been named Film City which is home to powerful media houses like Network 18, T-Series and Zee Media corporation. IT/ITES have also been allotted land are of 427.25 hectares and about 161 hectares for office complexes and socio-cultural activities.

The development of commercial land takes place depending on residential, industrial and institutional development. This is reflected by the share of developed commercial land being the lowest. The NOIDA Authority knew this would happen and requested each residential Sector to develop shopping centres and at least cater to local needs. The City Centre and other sub-district centres have been allotted 98.59 hectares for development of commercial complexes. Sector 18 has been the major commercial and financial area since the inception of NOIDA and covers about 35 hectares. Activities like high-end retail stores, stock broking firms, global eateries and privatised places like malls are present, all of which are part of the formal sector. Across the road

is Sector 27, the informal sector hub of the city. Low cost apparel, street vending, fruit and vegetable market are all present on this side. The below photo shows the two sides of the roads mentioned, and over them is the Blue Line of the Delhi Metro which caters to traffic from both sides without any discrimination.



Figure 4. Sector 18 is on left side and Sector 27 on the right side. Source: <https://chasingthemetrol.wordpress.com/2011/09/28/blue-line-noida-section/>

Construction firms like DLF have invested heavily in the entertainment sector of NOIDA and subsequently gave India's first destination mall - DLF Mall of India in 2016. A sprawling 2.2 million square feet, it is the country's first 'Zoned' destination mall modeled across five dedicated zones: Market Place, International Boulevard, The High Street, Family World and Leisure Land (ET-Retail, 2015). Previously the largest mall of NOIDA was 'The Great India Place' which is down the road and across the newly constructed DLF mall.



Figure 5. Overview of Commercial centre of Noida. Source: Google Maps

The Great India Place has a retail floor area of 947,000 square feet and is located opposite the Sector 18 commercial complex in Sector 38A. It is a part of the Entertainment City complex constructed in 2007, which incorporates an amusement park - Worlds of Wonder (Rediff, 2007). This sub-complex has been completed in recent years and attracts footfall from all the neighbouring townships. The immediate connectivity of this sub-complex with metro line and opening of late-night entertainment joints have led to footfall from Delhi, a reverse phenomenon. Earlier people from NOIDA, Ghaziabad used to travel to Delhi's various entertainment places like Connaught Place, Hauz Khas etc.

One important factor bringing in the footfall from Delhi is the liquor drinking age in Uttar Pradesh being 18 in contrast to 25 in Delhi. The large difference between the drinking age has pushed a big group of younger generation from Delhi to NOIDA for entertainment purposes.

Facilities like Ice Skating, international food courts that were once available only in distant Delhi malls have now arrived in NOIDA too. People living close to the UP border, in areas like Mayur Vihar Phase I, II, III now prefer to visit NOIDA rather than Delhi to avail those facilities. The presence of metro rail has added an extra advantage by providing an easier alternative to getting stuck in traffic.

NOIDA lies on a rich agricultural belt of western Uttar Pradesh and Haryana. Cities like Ghaziabad and Faridabad which surround it are growing with a strong industrial base as data suggests (Development Commissioner, MSME). Urban settlements like NOIDA are attracting migrants who are looking for job opportunities leading to a fast growth of population.

Office space is scarce in Delhi as explained earlier; many entrepreneurs are setting up offices in NOIDA because of the lower rent structures. The employees in turn find it convenient to live in NOIDA rather than pay skyrocketing prices in Delhi. NOIDA Authority has developed areas towards the southern part of the city for institutional and office facilities under the recent phase of development (Sector 125, 126, 127, 132, 135, 136, 142, 143, etc.). This has an added advantage for the entrepreneurs as they find fresh talent out of educational institutions situated nearby, generally next door. PayTm, who already has an office in the older industrial area recently bought 10 acres for a campus in the upcoming industrial area of Sector 137 (Economic Times, 2018). These new areas have been connected to NOIDA and Gr NOIDA via the NOIDA-Gr NOIDA expressway.

Connectivity in the city has been increased by efforts to introduce metro on the newly developed industrial and residential areas. The formation of NOIDA Metro Rail Corporation (NMRC) and their subsequent efforts to bring in metro connectivity have been applauded. They also follow the ‘phase’ model for development of the Metro. The first line called the Aqua Line

has been operational since the start of the year and covers 29.7 km with 21 stations along the route. It connects the existing Delhi Metro Blue line at Sector 51 and goes till the Depot in Greater Noida covering all the newly developed areas of NOIDA which were discussed before. NMRC has gone one more step by introducing Feeder/Shuttle buses to the various Metro stations, thereby providing last mile connectivity. To encourage cashless transactions, they also have promoted the use of a single Smart Card for both, the bus and the metro (NMRC website).

Transportation to other cities for shipment and travel has also been an issue that needed to be tackled with. NOIDA has done well in this area too by constructing expressways like the Yamuna expressway connecting Gr Noida with Agra. Rail road and air travel are two major methods of transportation for humans as well as goods. NOIDA's closest railway station tends to be the Nizamuddin railway station in Delhi which is 15 kms from the Town Centre. Since constructing railway lines doesn't come under NOIDA, there isn't much anyone apart from the Railway ministry can do about it. Currently all the air traffic of NCR is borne by the Indira Gandhi International (IGI) Airport as there isn't any other commercial airport in the area. But the Centre for Aviation India has announced that the foundation stone will be laid for the Jewar Noida International Airport soon. The estimated cost by the Aviation ministry is \$ 3.1 billion for a surface area of 2200 acres. This facility will serve as a secondary to the IGI and reduce its air traffic load (Times of India web, 2019).

What Now?

In the past decade, NOIDA has had developments that entitle it to be an independent city and not a satellite town. Looking at the map, one can observe that NOIDA is located at the centre of a large metropolitan network comprising of cities like Delhi, Gurgaon, Ghaziabad, Meerut, Faridabad, Bulandshahar and Sikandrabad.

The shift from traditional small and medium scale industries to IT/ITES and their supplementing R&D has already started. The aim will be to develop the city as an integrated town with strong infrastructure and facilities for the population to make a propitious living environment.

A city can be called self-sufficient when it has its own:

- a. Industrial complex
- b. Residential complex
- c. Institutional complex
- d. Commercial complex
- e. Infrastructural complex
- f. Transportation complex

And if once a person enters the city, he or she need not have to leave it for lack of any facility in the city. Be it a job opportunity in any of the three sectors, a place for entertainment, medical health or educational opportunity, the self-sufficient city should be able to provide for all and at reasonable cost. And if one visits NOIDA, he or she will be provided with all facilities they require. It is like what Dumbledore once said, “Help will always be given at Hogwarts to those who ask for it” (Harry Potter and the Deathly Hallows, 2007).

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