

Land Acquisition in Navi Mumbai and Greater Noida for City and Infrastructure Development and Green Belt Development

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Abstract

A fact to consider is half of the people in the World live in towns and cities as per UN, 2016. In India, 34.47 % of the population is estimated, to be living in urban areas by 2019, as per World Bank studies, causing a large no of problems and affecting the quality of life. The Intergovernmental Panel on Climate Change (IPCC) forecasted in 2013 as changes in climate, may aggravate environmental and social imbalances, particularly in faster urbanization in towns. Urbanization has led to a loss of urban green cover and biodiversity in cities. In addition, Urbanization in India has led to planning and development of new cities and infrastructure, which require massive land acquisition for the creation of cities like Navi Mumbai and Greater Noida etc. Extending the urban limits shall limit the people to access the nature and shall increase to experience more environmental hazards. These challenges should be addressed particularly for urbanization context, to improve the healthy and sustainable living conditions. The land earmarked for the urban development in both the said cities are majorly agricultural lands, ecological units and forest areas. So ultimately, Land acquisition has adversely affected the green cover and has laid negative impact on the environment. Hence, the concept of Urban Green cover would eliminate certain negative impacts and other social concerns of urbanization, and can support these cities more resilient to these changes. This paper aims to study, to investigate the implications of land acquisition on green cover of the land, the importance of green cover in cities and steps taken up by the Planning Authorities, in the newly planned cities of Navi Mumbai and Greater Noida, to reduce the environmental impacts. Finally assessing the innovative initiatives adopted by the Planning Authorities to develop green belt in Navi Mumbai and Greater Noida.

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Key Words: Green Cover Area, City Development, Forest, Plantation.

Introduction

The Countries decadal urban growth rate was 31.76% during 2001-2011. With reference to the Census of India data, 2011, around 377.1 million people live in cities. The facts says that, in India, the number of million plus cities has increased from 35 to 53 during the same decade. Indian urban centers are facing the challenges with regard to civic infrastructure, basic amenities and services as well as the environmental management system. These challenges cannot be dealt, with traditional Indian Urban Planning methods. Indian Urban Planning needs to be designed, within the framework of sustainable urban development. Further, the objective of sustainable Urban Development cannot be achieved, without following green path.

In case of land acquisition, environment regulatory framework needs to be efficient and transparent. I was said by, Shri Raghuram. G in his research It is stated that, the methods used for assessing the impact of environmental issues and land acquisition are still manual and it makes the whole process a highly time consuming. They advocate use of technology for the environmental assessments to ensure transparency in the system.

Generally, in the current situation the land acquisition is affecting adversely on the environment. In one of the research papers, it is said that, the indigenous communities undergo a negative impact due to the land acquisition programs on their livelihood and environment. Their study was based on Morogoro Municipality in Tanzania. These indigenous people have recommended, for conservation of agriculture on the mountain slopes, strengthening awareness programs on the land laws and policies, and improving ordinary people's access to formal institutions responsible for the provision of justice.²

In this present, Research Paper, two major cities namely Navi Mumbai and Greater Noida shall be discussed as the cases, as these two cities are said to be residing along with the other Mega Cities in the world. Navi Mumbai has been developed, as an extended growth center for Mumbai City, which is always called as Commercial Capital of India. The Second City is Greater Noida, which is the extended growth center for New Delhi, the Capital City of India, and the administrative Capital of the country.

These two cities Navi Mumbai, as well as Greater Noida, are results of meticulously designed City Planning. City development and administrative authorities were created, by the respective State Governments to create and administer these cities. A large part of green areas, were converted, in the process of creation of these cities. Data on land use suggests decline in

² The negative impact of land acquisition on indigenous communities' livelihood and environment in Tanzania, January 2011, Habitat International 35(1):66-73

green cover area. However, green cover areas were earmarked, in the Master Plans / Development Plans of these cities. The administrative authorities are proposing, plans to increase the green cover. They have collaborated with private organisations to increase the green cover in all these cities. Sharp differences have been observed, between the actual plan proposals and the real site implementation. However, there have been some best practices adopted and these cases have helped in the increased green cover area, of both the Cities

Coming to the case specific planned, cities in India, that is, Greater Noida and Navi Mumbai, in terms of green cover in these cities', records better than, many other cities of India.

The Greater Noida being a planned city having Master plan prepared and notified in March 2013 has a published with a green cover of 22.5% of the total area of 22,255 Ha., for a projected population of 12 lakhs by the year 2021. The Greater Noida comes under National Capital Region of India and was created, under the UP Industrial Area Development Act, 1976. Now, it is emerged as one of the best and wanted IT hub with the statutory Authority, providing the infrastructure for new developments.

Navi Mumbai was created, to decongest heavily populated Mumbai city. Navi Mumbai is located across two districts, Thane and Raigad. Navi Mumbai is the most preferred destination for people who are seeking decent living condition near to Mumbai. Navi Mumbai is the flagship project of City and Industrial Development Corporation of Maharashtra Limited (CIDCO). It has designated, 19.35% of greenery for Navi Mumbai in its recent Master Plan, as compared, previously in the past decades it was 27%, which was much higher than the standards, which is being gradually occupied.

Navi Mumbai and Greater Noida are the results of Indian Urban Planning, which were formulated after intensive and extensive deliberations. Authorities were created to administer these cities. Status of green covers in these cities needs to be assessed, as these cities exemplify planned cities.

Why is Greening Spaces are Important in Urban areas, The local and Global scenario.

The green spaces are such by virtue of its elongation in urban areas will enhance the quality of living, local resilience for sustainable lifestyles and shall be helpful to improve the health conditions of the urban habitat. Modern urban life style is associated with chronic stress, insufficient physical activity and exposure to anthropogenic environmental hazards.

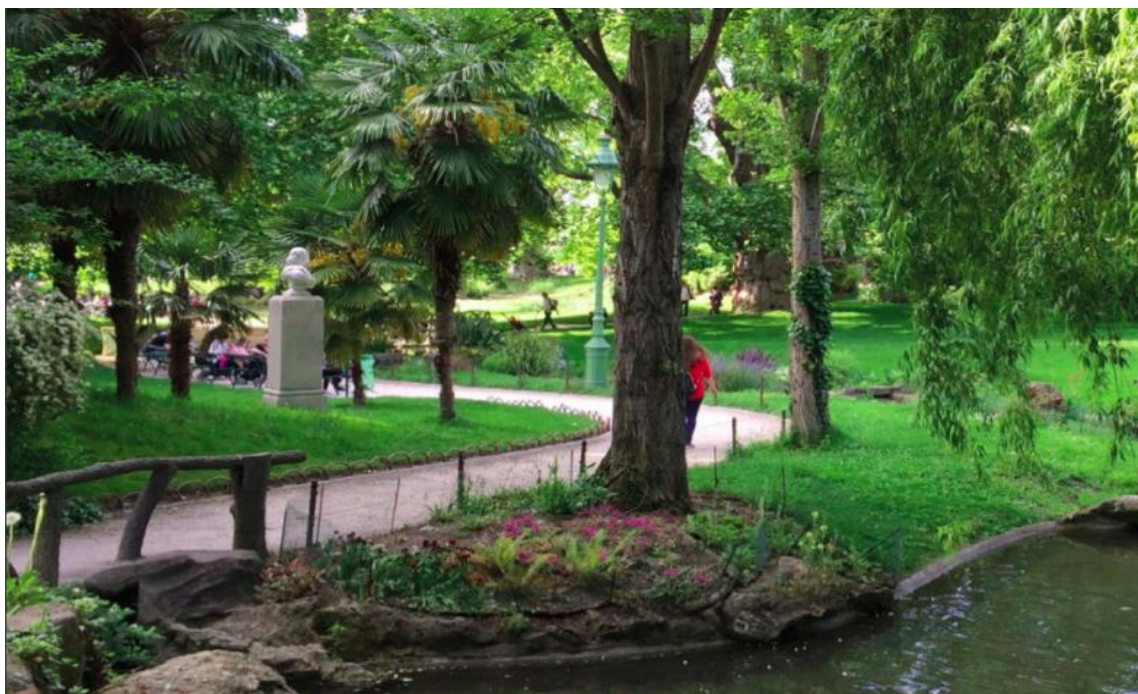
As per World Health Organisation, Urban Green Spaces report, it has reported that, Urban green spaces, such as parks, playgrounds, and residential greenery, can promote mental and physical health, and reduce morbidity and mortality in urban residents by providing psychological relaxation and stress alleviation, stimulating social cohesion, supporting physical activity, and reducing exposure to air pollutants, noise and excessive heat. Providing sufficient can help to ensure that:

- Urban residents have adequate opportunities for exposure to nature;

- Urban biodiversity is maintained and protected;
- Environmental hazards such as air pollution as well as noise levels are reduced;
- The impacts of extreme weather events (heatwaves, extreme rainfall or flooding) can be mitigated;
- The quality of urban living is enhanced;
- The health and well-being of residents is improved.

These Urban greens spaces are integral to a city's livability, health, and wellness. However, lack of dedicated funds for municipal parks and recreation departments and even with full funding, urban greenspaces are inadequate in size and disproportionate in distribution. The Green Development in the City would envisage

- i) Reduced heat by plantation around build-up area.
- ii) Some of the problems faced by cities today are air pollution, urban heat and extreme temperatures in summer and winter.
- iii) Flood mitigation measures by reducing Rainfall runoff and increasing ground water recharge.
- iv) Water quality protection through proper landscaping
- v) Reduced soil erosion by dense cover of plants and mulch holds soil
- vi) Improved air quality through plantation of trees, shrubs and turf remove smoke, dust and other pollutants from the air.
- vii) Lesser Carbon emissions by reduced air pollution
- viii)Improvement in Micro-climate Since urban green spaces are embedded in nature, though, they offer communities built-in health benefits by proximity (e.g. improved air quality) and are structured to be recreational.



FigureError! No text of specified style in document.-1 Photo credits: Urban Green spaces a brief for action report, WHO, 2017

In this context, it hereby clears that, the lack of green spaces in Indian cities is a provoking factor. Here, the high impermeability rate, in the urban spaces, strengthens the formation of urban heat islands, which intern affects the air quality and increase in the intensified flooding records.

These Urban green areas play a key role in enhancing the quality of life in towns/cities. Among the several environmental benefits of flora in urban environments, enhance in air quality improvement, drop in temperature and reduce in rainwater runoff in impermeable areas. Similarly, it is evitable that the quality and viability of dependency on the design, management and maintenance of urban green areas in cities is high.

The creation of an urban biodiversity layer is one of the solutions to these problems, as they significantly contribute to the improvement of environmental conditions in cities in many ways:

- i) Green roofs act as sinks for CO₂, the gas responsible for climate change. For each 100 square meters of green roof, the gas responsible for the greenhouse effect is reduced, by 1.8 tons per year. In addition, installing 100 square meters of green roof on top of a building can produce the oxygen needed by 100 people in a year.
- ii) The pollution emitted by 15 cars in a year can be removed, by 100 square meters of green roof, since the leaves of the green roof plants can retain these harmful particles on their surface.
- iii) Green spaces can reduce the ambient temperature of cities by a minimum of 1°C, thus reducing the urban heat island and harmful city smog. In this sense, 1°C cooler urban environments prevent, the harmful ozone layer, that is triggered, during intense heat episodes from forming.
- iv) Another benefit of green roofs is that they retain 40% of rainwater. In addition, they can delay water discharge by 18 minutes, in episodes of intense rain, preventing the collapse of urban drainage systems.

In a Comparison of European Green Infrastructure with planned Indian capital cities Infrastructure. A wide range of proposals can be proposed, at different scales in private or public spaces as in European countries, which can be adoptable in India are,

- roadside greenery and vegetation barriers along streets or rail tracks;
- small urban green spaces (such as gardens or pocket parks) and playgrounds;
- green roofs and facades;
- parks and urban meadows as urban forest for nature lovers;
- greenways and corridors (such as green trails for walking/cycling);
- recreational and urban gardening facilities (such as community gardens, sport and play areas and school grounds); and
- facilitated access to urban woodlands, forests and natural wildlife areas.

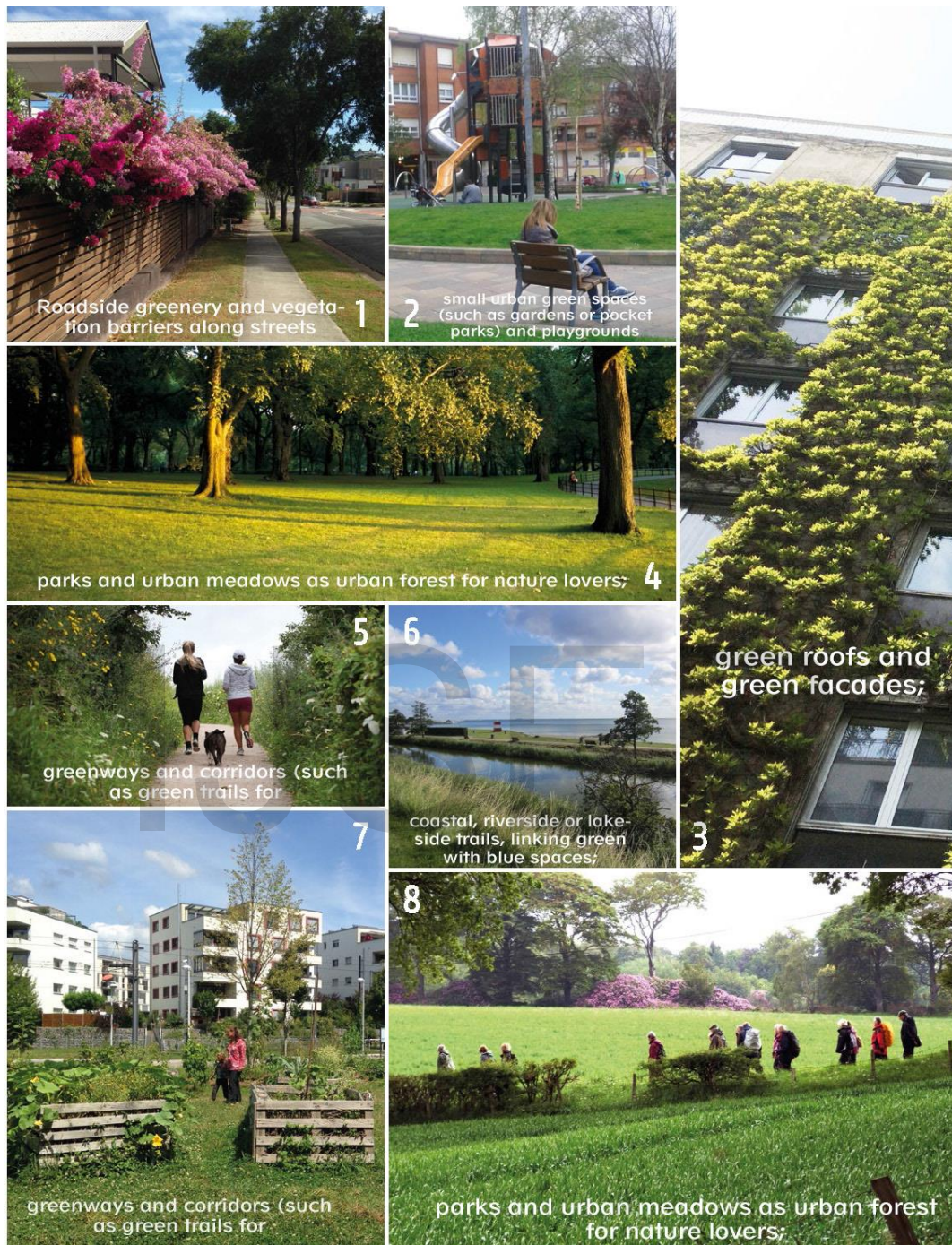


Figure -Error! No text of specified style in document.-2: Image showing various Urban greening concepts in EU (PC: Urban Green Spaces article, WHO, 2017)

This paper, at present, is consisting of three major parts, in the context of the green cover, first discusses the case of Navi Mumbai, second part discusses the case of Greater Noida

and third part discusses the consequences of the proposed International Airport Projects, Navi Mumbai.

As a brief, Navi Mumbai, Greater Noida are the results of planned Urbanization. These cities are created by proper planning and implementation of meticulously designed strategies. Land was acquired, on massive scale for creation of these cities. Mainly agriculture land was acquired. Acquisition of agriculture land and insufficient provision of greening areas, has reduced the green cover substantially in these regions. Master plans of these cities have earmarked the green cover in these cities. However, there is an urgent need to increase the green cover in these cities.

Case-I: Navi Mumbai and its Green Cover Area

The State of Maharashtra was formed in May 1960. Board of Industrial Development was formed in October 1960. Maharashtra Industrial Development Corporation, formed in August 1962, is the first Industrial Development Corporation in India. Mumbai, capital city of Maharashtra and financial capital of India, is congested city. Geographical shape of Mumbai give very restricted scope of future geographical growth. It also results in uni-directional movement of the traffic and imbalanced utilization of infrastructure. In this context, conception of Mumbai expansion was very much required. The Regional Plan 1970 highlights the urgency of arresting tertiary growth in South Mumbai and diverting it towards north as well to the East, that is, Navi Mumbai. Further, it recommends diversion of offices above a certain area, shift of government offices and non-location specific industries. Finally, it recommends necessity of satellite feeder townships.

The City and Industrial Development Corporation of Maharashtra Limited, (CIDCO) was established by Government of Maharashtra, in 1970. CIDCO was aimed to be established, as the expertise in Urban Planning, Transportation Planning, Engineering Design, Execution, Architecture & Housing, And Marketing & Estate Management. The development of Navi Mumbai is the flagship project of CIDCO. The idea of Navi Mumbai was conceived, with the prime objective of decongesting Mumbai. The major projects developed, in Navi Mumbai are International Airport, Exhibition Centre, Metro Railway, Central Park, Golf Course and Affordable Housing.

There is no separate Land Acquisition Act in Maharashtra but there is an amendment in The Land Acquisition Act in Maharashtra called Land Acquisition (Maharashtra Amendment) Act, 1972. In this Act, there are amendments in sessions 3, 4, 5A, 6 of the original Land Acquisition Act, 1894.

CIDCO was designated, as the New Town Development Authority (NTDA) for Navi Mumbai, 1971. Under the Maharashtra Regional and Town Planning Act, 1966, in October 1971, the CIDCO commenced to prepare and publish a development plan. The very objective of the

development is to decongest the Mumbai city by tapping off the growing population and opportunities from Mumbai to Navi Mumbai.

The Key Objectives for CIDCO are as per CIDCO Board note 605, dated 11.08.2017³,

- To reduce the further growth of population and jobs in Greater Mumbai by creating an attractive urban center on the main land which will attract immigrants who otherwise come to Mumbai and also to attract some of existing population from Mumbai to Navi Mumbai.
- To support an efficient and rational distribution of industrial growth through balanced development of urban centers.
- To provide physical and social facilities which will help to raise the living standard among the different sections of the society.
- To provide an environment which will allow the citizens of Navi Mumbai to enjoy richer lives by providing physical and social infrastructure befitting a modern society.

CIDCO has developed entire area in its jurisdiction with major 14 nodes, small self-sustained towns within the City. Out of these 14 nodes, seven developed nodes from Airoli to CBD Belapur were declared, under the Navi Mumbai Municipal Corporation in the year 1992. Navi Mumbai is located across two districts, Thane and Raigad. Navi Mumbai is developed as the most ideal, destination for people who are seeking decent living condition near to Mumbai.

Navi Mumbai witnessed high population growth rate. Increased share of residential area has put a pressure on green cover. Town administration must ensure the standards for the green cover.

Green Development Proposals in Navi Mumbai⁴:

The Green city concept is introduced by CIDCO, mainly in order to develop riverfronts, waterfronts and Marina, which will help to enrich and protect the open spaces. The wide range of proposals envisaged, while undertaking the green city project proposals, for preservation of environment and protecting the green spaces. CIDCO had started commencing greening conservation by developing the mangrove park at Vaghivali, with 245 hectares area with a project cost of Rs.50 crores and another one of 289 Ha., of land between Vashi and Nerul. This is allocated, in order to create prominence of coastal mangroves, flora and fauna associated with it. As per the zonal regulations, the area covered under mangroves with about 1471 hectares of land is considered, under No Development Zone and is being handed over to Forest Department for their conservation.

³ <http://cidco.maharashtra.gov.in>

⁴ Report on CIDCO Budget Estimates for the Year 2018-19

At the city level, out of the notified area of 343.70Sq.km almost 32% of the gross area is kept and maintained under open use activities which includes-Regional Park of 62Sq.km (18% of the area), No Development Zone of 36 Sq.km. (10% of the area)and Open Space i.e. nodal greenery of 13Sq.km (4% of the area).

CIDCO has played crucial role in earmarking green cover areas in Navi Mumbai. On the developed Nodes, out of total area of Navi Mumbai Municipal Corporation's (NMMC) jurisdiction, an area of 57% is for development., Forests and wetland account for 24% and 12% of the total area, respectively. Part of Thane and Uran creeks surrounds Navi Mumbai are the prime hotspots to observe migratory birds encouraging the biodiversity. Accordingly, the Biodiversity panels are installed, at Nisarga Udyan, Koparkhairane, and Airoli by NMMC in collaboration with TERI with the objective of creating awareness within the city. NMMC proposed for avenue plantation on Parsik Hill, in the abandoned excavation site, to increase the green cover of the city.⁵

In NMMC, higher than 75% of the total area of Turbhe and Vashi is construed /developed area, which indicates higher the population density, when compared to other areas. As regards, Navi Mumbai Municipal Corporation, proposes plans to increase the green cover. It recommended forest (Marshy back water) areas at Koparkhaine, Belapur, Ghansoli, Digha and Nerul, to be retained. These areas are required, to be conserved. Further, it recommended wetlands in all the wards except Digha. Moreover, it recommended marginal farmlands in Belapur, Ghansoli, Koparkhairane and Nerul.

Alarmingly, data on land use suggests decline in Regional Park area. This concern needs to be addressed.

Table 2: Land-Use Allocation in 1973, 1981, and 1992 Development Plans in Navi Mumbai (figures are in percentage)

Land use	1973	1981	1992
Residential	17.67	29.33	38.64
Commercial	4.03	1.88	1.67
Industrial	8.18	12.53	12.55
Port area	3.39	3.48	6.6
Wholesale markets and warehousing	3.22	1.73	1.33
Regional parks	21.02	26.17	19.35
Institutional	10.4	0.22	0.31
Fishing and allied	2.62	1.78	1
Transportation	10.5	8.94	8.65
No-development zone (incl. defence)	11.27	13.91	9.9
Sewage farming	2.62	—	—

⁵ www.nmmc.gov.in

Parks and playgrounds	4.98	—	—
Total	100	100	100

Source: Shaw (2004)

Land use allocation for residential use has increased from 17.67% in 1973 to 38.64% in 1992. Land use allocation for commercial use has decreased from 4.03% in 1973 to 1.67% in 1992. Land use allocation for institutional use has decreased from 10.4% in 1973 to 0.31% in 1992. The plans for increasing green cover of the city, as proposed by NMMC and CIDCO, needs to be implemented properly.

Other possible proposals explored in surrounding Mumbai Metropolitan Region (MMR)

Further, in the regional context, Mumbai Metropolitan Region (MMR) receives average rainfall up to 2500 mm annually and thus has a huge potential of Rain Water Harvesting (RWH). Municipal Corporation of Greater Mumbai (MCGM) has made rainwater-harvesting compulsory for buildings above 300 sq. meters since 2007. However, RWH needs to be made mandatory for all constructions. There are several examples, where residents themselves have set up RWH plants either to recharge bore wells or to store water. For an instance, the Sea Line Apartments in Khar, Jago Mumbai Movement, or Shivaji Park, which are in the heart of the city, indicate high potential and benefits of Rain water harvesting. In Khotwadi slum, a public toilet with washrooms is managed, by Triratna Prerna Mandal and does not use a drop of water from MCGM. The facility is used, by nearly by about 1400 people daily and needs approx. 8000 liters of water per day. An ingenious rainwater harvesting and ring well facility with a storage tank supplies all water needed.

Through a research of SANDRP, it is indicated that MCGM's Rainwater harvesting Cell is functioning dismally and does not even have data on number of buildings, that have functioning rainwater harvesting systems or the status of RWH in government buildings. It is found that, the condition of the cell was non-functional with limited manpower. This indicates the level of interest should the Mumbai administration to consider Rainwater in the City, which receives average 2500 mm rainfall annually.

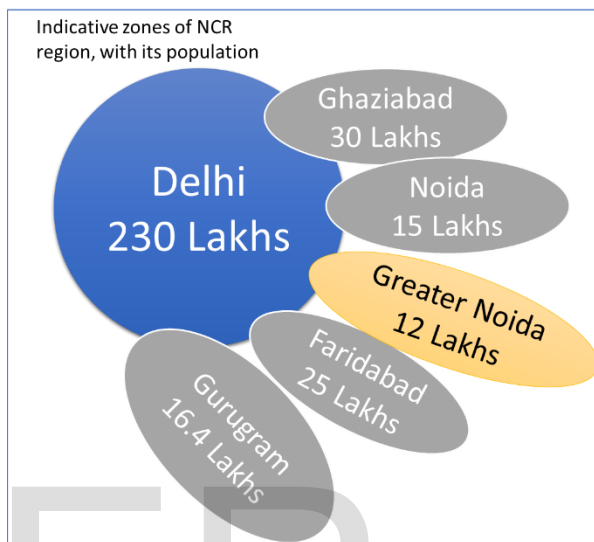
Now with reflection to the European development, few of the proposals such as green roofs and facades, parks and urban meadows as urban forest in smaller pockets of lands in residential and commercial zones, greenways and corridors, recreational and urban gardening facilities, can be taken up more intensively with more self-sustained, modes. Along with the above, if the rainwater harvesting is included, it will have self-sustained, source of urban green elements, and shall largely benefit the environment, along with the conservation of, natural resources, which will lead to a better living conditions.

Case-II: Greater Noida and its Green Cover Area

Noida has emerged as one of the most planned cities of India. It is also classified, as a special economic zone (SEZ). In the whole National Capital Region; the city has highest per capita income. It is located in Gautam Buddha Nagar district of Uttar Pradesh. It can be considered, as the best city in Uttar Pradesh. It has emerged as the Centre for IT companies.

Noida Authority administers the city's infrastructure. It is a statutory authority set up under *Uttar Pradesh Industrial Area Development Act, 1976*. Further, Noida Authority comes under the Infrastructure and Industrial Development Department of the U.P. State Government.

Since Noida has a faster rate of development, the Uttar Pradesh government decided to develop an extension to Noida city with better planning prospects. The idea was to create a world-class town, with a proximity of 25km from Noida. A railway station near Boraki and an Greenfield Airport in Jewar, were included later, in the plan intending to develop Greater Noida as an independent city. During the 1990s, the then part of Gautam Buddha Nagar now has become, the Noida extension known as Greater Noida. The Greater NOIDA Authority manages the development of the city. Greater Noida, is connected to Agra by the six-lane Yamuna Expressway.



As per 2011 Census, the population of Greater Noida is 1,02,054, Sex ratio is low, 837 and 84.48% of workers are main workers. Most of the main workers are engaged in other economic activities. Further, substantial percentages of main workers are household workers (10.31%). Electrical products are manufactured, in Greater Noida.

Table 6: Population Profile of Greater Noida.

Name	Greater Noida (CT)
Total population	102054
Sex Ratio	837
Child Sex ratio	818
Percentage of scheduled caste population	11.60
Percentage of main workers to total workers	84.48

Percentage of main cultivators	3.59
Percentage of main agriculture labour	4.15
Percentage of main household workers	10.31
Percentage of main other workers	81.95

Source: Census of India, 2011.

Table 7: Land-Use Allocation in Noida and Greater Noida

In **Noida City** Master Plan 2001, the green areas planned for 7.7% of the total area and in the Master Plan 2021, the area devoted to recreational use also has increased, substantially to about 15.92 percent of the total proposed urbanizable area. This is further supplemented, by area under agriculture use and area under water bodies leading to effective green area provision of about 20 percent. Noida Authority's horticulture department has claimed that the greenery area has increased to 18% (Times of India, June 2018).

In the case of **Greater Noida**, the green area initially planned for 26 percentage of the total area, as per Master Plan 2001. As per the Master Plan 2021, the percentage planned green area has relatively decreased to 22.4%. The land allocated for green area comprises of i) Recreational green of 2016 Ha, ii) Institutional Green with 1017 Ha, iii) Parks and open spaces with 952 Ha, and iv) Reserved Forest area of 1015 Ha. The allocated green area for Noida is 16%, whereas in case of Greater Noida the green area is 23%. As per Times of India's (5 June 2018), Noida' district administration freed 68 hectares of encroached land and planned to convert these lands into green area. Administration planned for tree plantation on the retrieved land.

Land use distribution in Greater Noida (Area in Ha)

Land-use Category	Proposed area for 2001	% area	Proposed area for 2011	% Area	Proposed are for 2021	% area
Residential	1310.0	25.8	3000.0	22.1	5000.0	22.4
Commercial	99.7	2.0	720.0	5.3	1200.0	5.4
Industrial	570.6	11.2	2600.0	19.2	4201.2	18.9
Public and Semi-public	1596.0	31.5	1970.0	14.5	3474.0	15.5
Green area	1361.9	26.8	3000.0	22.1	5000.0	22.4
Transportation	137.3	2.7	1280.0	9.4	3339.8	15.0
SEZ			1000.0	7.4	40.0	0.8
Total	5075.6	100.0	13570.0	100.0	22255.0	100.0

Reference to the Times of India article published in 2016 March, The greenery in Greater Noida will increase if the New Master plan by The Greater Noida Industrial Development Authority. It was introduced, for gearing up to implement the environment management plan, a comprehensive environment-friendly land-use strategy to protect the environs, and increase the ground coverage of recreational green areas in the city.

Through the Environmental Management Plan, it was proposed, to create green spaces, quiet streets, recreational parks and venues for social and cultural activities. The main objectives envisaged are a) Application of best practice environmental management to a project, b) Implementation of a project's EIA including its conditions of approval or consent, c) Compliance with environmental legislation, and d) Environmental risks associated with a project are properly managed.

Further GNIDA also proposes to revise its building bylaws to enhance the, per person per hectare greenery density of the planned population of the city. The proposal is to allow an increase in ground coverage in recreational green category of land in the city.

The Master Plan once approved by all stakeholders it shall allow, a ground coverage of 25% instead of the earlier 20% in projects future developable recreational green areas of Greater Noida. Considering GNIDA had earlier allowed a 0.5 enhancement in floor area ratio (FAR) along the Metro corridors to give realty a boost, there is a corresponding need to increase the ground coverage, which was revised.

Following directions of the Supreme Court, GNIDA is supposed, to distribute enhanced compensation of 64.7% for land acquired and 10% developed plots in lieu of ABADI land to farmers. The distribution of enhanced compensation has been initiated, but since GNIDA is falling short of land parcels, it was decided that leaving parks, green belts and commercial areas, all other categories of land use in the zoning plan of 2021 will be amended and used for distribution to farmers. Hence, the board proposed to change the land use in certain pockets of the Master Plan- 2021 to accommodate the farmers.

Greater Noida Authority gave clearance for the dense forest in a 71,000 sq.m land by planting around two-lakh plants⁶. The dense forest, will be developed, by the Miyawaki technique. The Gautam Buddh Nagar administration has signed a memorandum of understanding (MoU) with Korean electronic major Samsung, for the massive afforestation in Dadri area. As per the memorandum of understanding, Samsung will develop the forest and take care of the plants and trees for a period of 10 years. The work will be done, under the company's Corporate Social Responsibility (CSR) work. The company will not have any kind of ownership of the property.

⁶ Source: Business Standard. (September 11 2019).

Some of the key feature of greening development in Greater Noida are, i) about 25% area reserved for Greenery, ii) interlinked green spaces – continuous lung space, iii) green belts along arterial roads to control development, improve aesthetics and environment, iv) introduced innovative concept of institutional green areas, v) detailed tree plantation plan to ensure shade & flowers round the year, vi) ensuring streetscape include, no hoardings permitted, controlled signages and display boards, no-bills / no painting on walls - heavy penalties, if there are deviations, large plot owners to install, illuminated boards and well laid out avenues.

I. Navi Mumbai International Airport Project and the Environment

The, Navi Mumbai International Airport project is fully planned, and Government of Maharashtra appointed CIDCO as nodal agency for implementation. An area of about 2268 Ha., of land, in total has been earmarked by CIDCO, for this project. Out of this, Phase-I of the Airport project, is now expected, to be commissioned, by the year 2021-22.

There were serious concerns expressed over the environmental impact of the proposed Navi Mumbai International Airport. In June 2010, Center of Environment Science & Engineering, Indian Institute of Technology, Mumbai submitted the Environment Impact Assessment report of the proposed Navi Mumbai International Airport. The report expressed, its concerns over the project, as it leads to diversion of two rivers, loss of mangrove spread in 400 acres and blasting of an island.

As compared to Navi Mumbai International Airport, Jewar airport project is quite new. On 24th June 2017, Government cleared a proposal for setting up a Greenfield Airport in Jewar, Greater Noida. It is expected that, the airport would be operational in next 5-6 years. 3,000 hectares of land has been notified by the Yamuna Expressway Industrial Development Authority, for a world-class, Industrial Airport. Most of the land is agricultural land. The land acquisition would drastically reduce the green cover of the project area. Best practices of Noida as well as Greater Noida, green cover shall be implemented, here also.

Conclusion

This study reflects that, the initiatives taken up under Public-private partnership mode has yielded remarkably good results and increased the green cover area. These good management practices help in increasing the green area when implemented in convergence with proposed Master Plans and other policies. Navi Mumbai Municipal Corporation's collaboration with TERI, Noida's adoption of Japanese technique 'Miyawaki' and Gautam Buddha Nagar administration collaboration with Korean electronic major Samsung are the best examples of Public-Private Partnership, to increase the green cover area of the city. Earmarked green cover areas need to be protected, by means of the Regulations. Further, International Airport Project would affect adversely the green are of the project area. Administration must adopt best practices to maintain the standard share of green cover area, to ensure Sustainable Green Development.

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