

Regeneration: Nithari Village

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Abstract

The research paper named as Regeneration of Nithari Village deals with various issues available in urban village after surrounding area development, and here we have discussed minimum intervention for the issues/ all these intervention is framed in the form of guide lines which can be used to other village development of same region.

We have studied the village from following point of view:

Physical characteristics of the village, through aspects of built form open space relationships, movement networks, and Environment concerns Urban Character.

Interface character of village as well as planned developed areas.

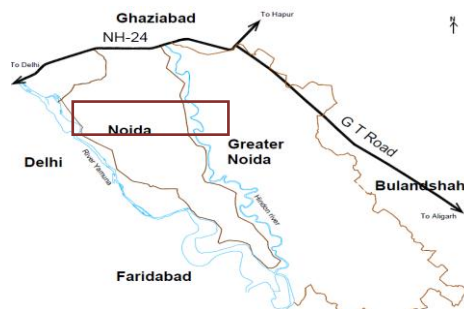
The village Nithari of Noida is chosen as there are many villages near Taj Expressway which will face the same problem in future, so the model for these villages can be prepared, because most of these villages have the same problem. And the interesting is that these villages are not urbanized, these under the process of urbanization, so the identification of the problem is easy and to make suitable policies to these areas will also be easier.

Keywords Urban Village, Planned, Unplanned, Issues, Minimal intervention, Expansion, core, fringe development/ regeneration.

1. INTRODUCTION

Noida for the New Okhla Industrial Development Authority, is a city in India under the management of the New Okhla Industrial Development Authority (also called NOIDA). Noida came into administrative existence on 17 April 1976 and celebrates 17 April as "Noida Day".

It was set up as part of an urbanization thrust during the controversial Emergency period (1975–1977).



map1(Noida). Source: mans of India

The city was created under the UP Industrial Area Development Act.



map2(Noida), Source: master plan noida

1.2. Location

(28.57°N 77.32°E)

- **Nithari** is a village in the western part of the state of Uttar Pradesh, India, bordering on New Delhi. Nithari forms part of the New Okhla Industrial Development Authority's planned industrial city, Noida, falling in Sector 31.



Figure 1: Noida images



- 1 km from sector 18, the major commercial hub of Noida
- The selected area is enclosed by the Residential planned sectors (sector 20,25,27,30,36 and 31 of Noida) and the commercial sectors.

1.3. Climate:

Temperature ranges from maximum of 45°C to minimum of 23°C in summer in March to June.

Monsoon season prevails during mid-June to mid-September.

The cold waves from the Himalayan region makes the winters in Noida chilly. Temperatures fall down to as low as 3 to 4°C at the peak of winters, In January, a dense fog envelopes the city

2. ISSUES:

2.1 PHYSICAL INFRASTRUCTURE:

The physical infrastructure includes :

- Water Supply
- Sewerage
- Solid waste management
- Electricity
- Telecommunication
- Roads

2.1.1 Water Supply:

Issues :

- The source of water in Nithari village is Bore well every house has their individual boring. But the water from the bore well is not fit for drinking it requires further treatment to make it fit for drinking.
- The water table in this area is 25 ft but the boring are done up to the depth of 120 to 130 feet which cost around 75,000 RS. So most of the house hold have boring up to the depth of 40ft.
- The drinking water is supplied in 25 liters can by vendors which have their independent boring and R.o plant each bottle cost around 25 rupees.
- The quality of drinking water cannot trusted as there are no quality checks and no quality standards are followed in the plants.
- The other source of water supply are NOIDA authority tankers which come occasionally for certain events like marriages etc.
- There is a large scale extraction of underground water which is a concern as water table of Noida is already sinking.

2.1.2 Sewerage:

Issues:

- Lack of sewerage system 90 % of the household has septic tank and the effluent from these septic tank flows in the drains at the side of roads, mostly in rainy season.
- Lack of proper drainage system Apart from the sewerage system, the area does not have a proper drainage system . Stagnant water in low lying area is creating unhealthy environment in the region.
- During the monsoon season the rain water mix with the sewer water and overflows in the road .
- The sewer of this area goes to river Yamuna through nallah without any treatment.
- Lack of maintenance The drains are completely obstructed with the garbage and roadside waste.
- According to standards 80% of the water supplied is returned as waste 80 % of 25 MLD =20 MLD

2.1.3 Solid Waste Management

Sources of solid waste generation are :

- Household waste
- Commercial waste
- Construction waste
- Street sweeping

Issues

- No organized system for collection of waste from government side. Only two people for whole the village are not sufficient (1200 dwelling units are there in Nithari village)
- Committee has taken this responsibility and takes 50 rupees from each household for solid waste collection.
- Many residents are not ready to pay to committee and are dumping waste on vacant plots.
- Lack of public awareness is the main cause which led to this situation.
- As per standards the generation of waste varies from about over a quarter of kg in small towns to about half a kg per capita in large metro cities

2.1.4 Electricity:

Sources of electricity

Paschimanchal Vidyut Vitaran Nigam Limited (Noida authority)

Issues:

- No proper metering of connections.
- Haphazard connection layout.
- Power cuts for 5 to 8 hours daily.
- Electricity poles on the street
- Demand calculation According to standards 2kw is required per House hold. The provision of one 11 kv Substation for a population of 15,000 Total power Demand = No. of Dux2kw Total Power Demand =13,350x2 =26,700KW

2.1.5 Roads

- Major portion of the road is kacha road which become flooded with water in rainy season.
- There is no provision off street parking.
- Some Street are very narrow and they did not get adequate sun light and ventilation.
- The roads are encroached by the residents the balcony and plinths steps of every house projects on the street.
- More than ½ R/W of Masjid-Mandir side road is encroached by the shopkeeper.
- The solid waste is dumped near by the road, and no proper management for keeping it clean, so condition is very poor.

- Many obstructions are there on streets like some places poles for electricity Are in middle of the street which make it inconvenience to the people.

2. SOCIAL INFRASTRUCTURAL Issues

2.1 Social Spaces:

- Lake of spaces for social interaction.
- Lake of open spaces (green area reduced day by day, even no tree within the core of the village)
- Problem of parking.
- Lack of recreational spaces.



2.2 Lack of Facility:

- As the land is acquired by the govt for the planned Noida, so now there is no space for the festival celebration and large gathering for festivals like Dushehra, Ramlila.
- Now people have to go in planned areas to do above activity.
- But in the same village. There are some vacant space which can be used for the gathering purpose.

2.3 SOCIAL INFRASTRUCTURE:

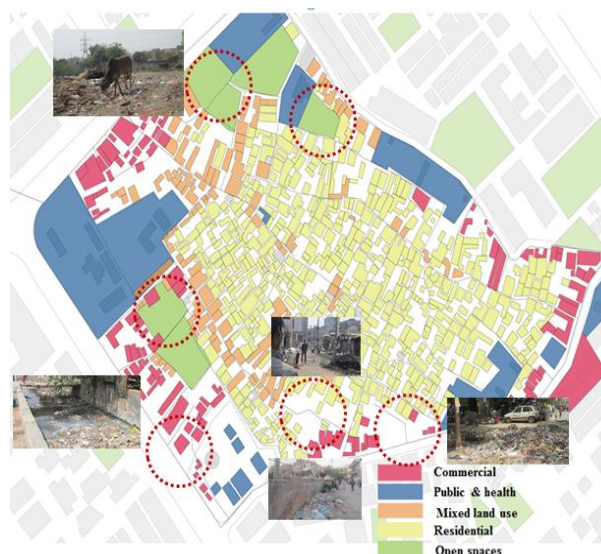
Insufficient social infrastructure to be up graded like

- Old age recreational spaces as demography shows that people want to settle in Noida.
- Play area for kids

3. Vision & Development strategies:

To study the various steps involved in transformation of Urban Village and propose a development plan with local people and authorities to implement the same for urban development, to serve as a guide for similar settlements in the whole country. Intervention will be in the form of Design and policy.

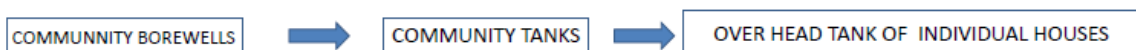
- Provide physical Infrastructure to the village: Water supply, sewage, solid waste management, Electricity as per the demand supply gap.
- Improving accessibility of the streets by removing the encroachment etc and prepare a traffic management plan.
- Creating community open spaces and play area to the kids and the refreshment areas to the old people with available resource.
- Improving the character of the periphery stretch of the village to maintain it with the surroundings.
- Provision of parking on the periphery of the village as the new upcoming commercial centre in in the vicinity of the village. So the periphery streets / roads will re module itself.
- Peripheral road/s streets is proposed for two lane as the width of the streets are more than 8 mts. Sector roads are already two lane.
- Junction are defined which have the maximum concentration of traffic.
- Movement at defined junction is proposed to reduce the traffic problem for future.
- Not a crossed single street is there in Nithari which is suitable for four wheeler traffic movement (partially can be used for).



3.1 Water Supply:

Community Bore wells & Tanks

- Some community bore wells and tanks can be provided for a group of dwelling units and water is supplied through these bore wells & tanks by doing this we can reduce the amount of wastage of underground water that is happening because of individual borings .The local RWA or Authority can take this initiative .
- Providing Community Taps and Group Connections
- Community taps can be provided by the Noida Authority for a group of residences and Market places and the cost of supplying this can be charged from the Resident and some public area can be considered for locating these taps. By doing this we can supply good quality drinking water to this Area .



Rain water Harvesting

For any new construction in the region it should be made mandatory to have a rain water harvesting pit. & some common rain water harvesting pits can be provided For a group of Buildings.

3.2 Solid Waste:

Encroachment: Most of the drains along the streets are being encroached by the shopkeepers by extending their shops or making steps towards their shops. This affects the cleaning services by the respective agencies involved in the service provision.

Open Drains: Since most of the drains are open, lot of silt gets into the drains and reduces the flow. Choking at culverts, etc. is common:

There is no segregation of solid waste at source.

Inefficient Cleaning: The city has poor capacity in terms of the drainage lines due to limited resources of cleaning and maintaining At present the total solid waste generated in the city is around 10,000 kg per day.

Issues:

- No organized system for collection of waste from government side. Only two people for whole the village are not sufficient (1200 dwelling units are there in Nithari village)
- Committee has taken this responsibility and takes 50 rupees from each household for solid waste collection and they also put the solid waste in the open areas which is much hazardous to the health.
- Many residents are not ready to pay to committee and are dumping waste on vacant plots.
- Lack of public awareness is the main cause which led to this situation.
- As per standards the generation of waste varies from about over a quarter of kg in small towns to about 0.65 kg per capita in large metro cities

Proposals:

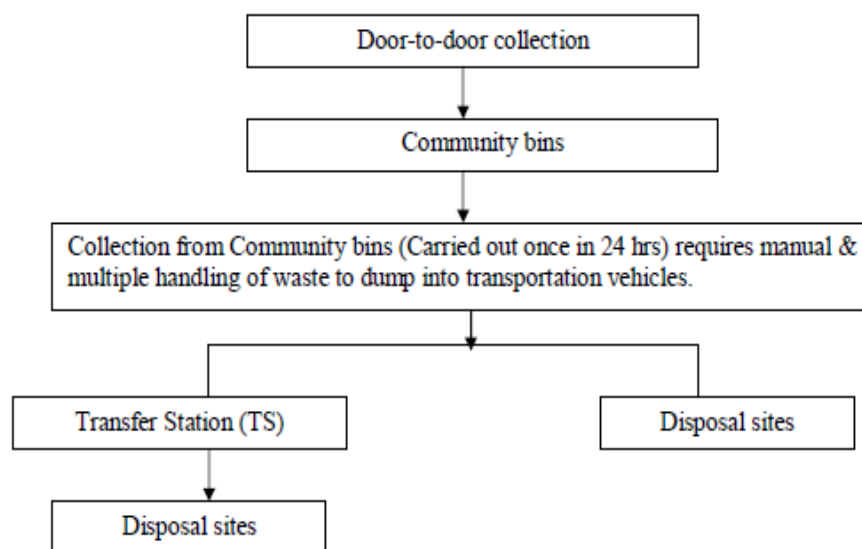
Providing awareness to the public towards source reduction and segregation Practices.

- Providing proper community bins at suitable places.
- Initiating door to door collection system in entire Area and the initiative to be taken by the Villagers/ ppp / govt.
- Regular street sweeping.
- Solid waste management plan:

Segments of Solid Waste in Nithari:

Municipal solid waste (MSW), also called Urban Solid Waste, and is a waste type that includes predominantly household waste (domestic waste) with sometimes the addition of commercial wastes, construction and demolition debris, sanitation residue, and waste from streets collected by a municipality within a given area. They are in either solid or semisolid form and generally exclude industrial hazardous wastes. MSW can be broadly categorized into five broad categories as-

- **Biodegradable waste:** food and kitchen waste, green waste (vegetables, flowers, leaves, fruits), paper (can also be recycled).
- **Recyclable material:** paper, glass, bottles, cans, metals, certain plastics, etc.
- **Inert waste:** construction and demolition waste, dirt, rocks, debris.
- **Composite wastes:** waste clothing, Tetra Packs, waste plastics such as toys.
- **Domestic hazardous waste**(also called "household hazardous waste") &toxic waste: medication, e-waste, paints, chemicals, light bulbs, fluorescent tubes, spray cans, fertilizer and pesticide containers, batteries, shoe polish.



Source	Typical waste generators	Solid waste contents
Residential	Single and multifamily dwellings	Food wastes, paper, cardboard, plastics, textiles, leather, yard wastes, wood, glass, metals, ashes, special wastes (e.g., bulky items, consumer electronics, batteries, oil, tires), and household hazardous wastes.
Commercial	Stores, restaurants, markets, office buildings, etc.	Paper, cardboard, plastics, wood, food wastes, glass, metals, special wastes, hazardous wastes.
Institutional	Schools, hospitals, government canthers.	Paper, cardboard, plastics, wood, food wastes, glass, metals, special wastes, hazardous wastes.
Construction and demolition	New construction sites, road repair, renovation sites, demolition of buildings	Wood, steel, concrete, dirt, etc.
Municipal services	Street cleaning,	Street sweepings;
Agriculture	Crops, orchards, dairies, farms.	Food wastes, agricultural wastes, hazardous wastes (e.g., pesticides).

4. MANAGEMENT PLAN:

The solid waste management plan will addresses the following activity modules:

- Waste collection (Primary and Secondary)
- Sweeping of main roads, internal roads, open and green areas
- Segregation of waste
- Transportation of waste
- Treatment of organic waste to maximise 'life' of landfill sites
- Scientific disposal of waste, wherein, domestic, industrial and bio-medical waste shall be disposed as recommended by Central Pollution Control Board (CPCB) through its various Acts and guidelines / rules.

5. RESIDENTIAL WASTE MANAGEMENT:

5.1 Systems at the household level:

- The households produce the following types of waste for list of domestic wet, dry (recyclables) and hazardous wastes:
- Wet Waste – Organic / Kitchen wastes (Rejects of Vegetables, Fruits, etc.)
- Dry Waste – Recyclable waste (Metals, Plastics, Paper, etc.)
- Hazardous waste – Discarded medicines, batteries etc.

5.2 Two – bag segregation system at source:

- Every household to use 2 bags (Blue and Green) of 10 – 15 litres capacity each (for a family size of 5 persons). The blue and green bag shall be used for dry and wet waste respectively. The bags shall be tied up before handing over the waste to the waste collectors.
- Hazardous waste to be stored in black bags, as and when produced.
- These bags shall be standardised and supplied by NOIDA.

Collection of waste:

- Door-to-door collection of waste for household's village on daily basis between 7 AM to 12 noon.
- Minimum number of waste collectors–75 households per collector.
- Tempos / closed body utility vehicles could be used for door-to-door collection, which shall have two containers / in-built partitions for wet and dry waste and place to keep one large bag / sack for hazardous waste. Every collector shall collect waste in bags and put them in the respective container / partition in the tempo / utility vehicle. One tempo / utility vehicle shall be able to service 300-400 houses covered by about 4-6 waste collectors. This norm would vary with population density of the area. The waste collected (in tied bags) from households shall not be opened or mixed, at any stage before the treatment / disposal site.
- The containers / partitions in the tempo / utility vehicle shall be colour-coded (Blue containers for dry waste and Green containers for wet waste) indicating the type of waste stored.
- Each waste collector shall also have 1 large sack / bag to store hazardous domestic waste (Black plastic bag).
- The hazardous waste, whenever given, shall be stored in the black sack / bag and never mixed with dry or wet waste.

- The waste collectors shall be given a bell / whistle, which he shall ring / blow to announce his arrival. The people on hearing the bell / whistle shall put their bags outside the main gate of their house. This would help in minimizing the 'lead time' for door-to-door collection of waste.
- The households shall keep the bags tied up outside the main door if they are not going to be at home at the time of waste collection.
- Noida Development Authority (sewer and JAL dept) shall also be responsible for segregation of waste. This is necessary to ensure that the waste collectors do not mix waste.

Sweeping of internal roads / streets / open areas / green areas management:

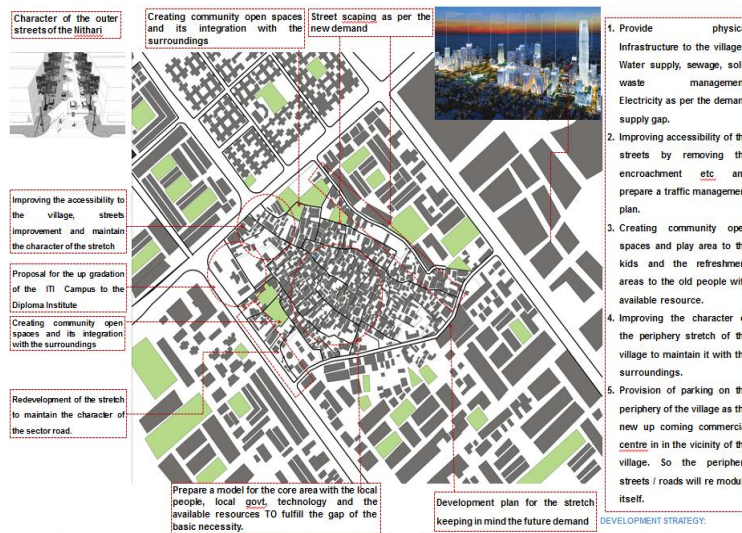
- Sweeping of internal roads / streets / open areas shall be done on daily basis.
- Sweeping of roads of ROW greater than 60 meters shall be done using mechanized road sweeping machines. Roads of ROW less than 60 meters shall be done manually by sweepers using appropriate tools, .
- The waste collected while sweeping shall be segregated by the sweepers.
- The handcart / rickshaw with closed containers could be used for storing the segregated waste collected while sweeping.
- Each sweeper shall be given 1000 running metres (1 Km) of road length depending on the population density of the area.
- Wherever there is a road divider / median, the two 'carriage-ways' shall be treated as two roads. Hence, 1-running Km of such a road shall be cleaned by 2 sweepers.
- For open and green areas (parks and gardens), one sweeper could be given about one acre for cleaning and sweeping. In large public gardens / parks, composting could also be practiced by the gardeners for captive consumption of compost.
- Each sweeper shall be given a long-handled broom, as they are more convenient to use. Each sweeper shall also be given a metal tray and metal plate for facilitating easy transfer of street sweeping from the streets into the rickshaw. Sweeping shall be done between 10 AM to 1 PM specially in urban village.
- Based on the size of these urban villages, a minimum of two sweepers shall be deployed for each villages
- These two sweepers shall be responsible for waste collection from households and sweeping /cleaning of roads and drains.
- The waste collectors are also required to collect animal waste from the households, internal roads, streets and drains. The households who wish to store animal waste shall do so only within their premises.

Systems for cleaning surface drains / Underground Drains / Manholes:

- The surface drains shall be cleaned regularly to prevent disposal of waste into the surface drains.
- The closed drains shall be cleaned once in 4 months using mechanical system. However during the rainy season, NOIDA could increase the periodicity on need basis.
- However, the drains / Nullahs in the urban villages shall be cleaned on daily basis throughout the year. The following norms could be adopted
- (a) 500 metres per person in day for drains with depth more than 60 cms.
- (b) 1000 metres per person in day for drains with depth less than 60 cms
- (c) Surface drains of more than 2 feet depth shall be done in supervision of the Urban services department of NOIDA.

Shops / Offices / Institutions / Schools / Colleges / Training Centres / Workshops) Waste management:**Two – bag segregation system at source.**

- Every shop or commercial outlet to use 2 closed bags (Blue and Green). The capacity of bags shall be on the basis of the persons employed. As an approximate norm, the capacity of each bag shall be 15 liters for every five people employed. The blue and green bag shall be used for dry and wet waste respectively. The bags shall be tied up before handing over the waste to the waste collectors.
- Hazardous waste to be stored in black plastic carry-bags, as and when produced.
- These bags shall be standardized and supplied by GNIDA.
- Closed Plastic litter bins of about 30-40 liters capacity shall be installed in commercial pockets and marketplaces as 'community bins'. These closed containers shall have handles on the top or on the sides.
- These bins shall be used by the visitors to the market / commercial area.
- These bins shall be located at regular intervals (about 25 - 250 meters) depending on the size and nature of the market.



6. ELECTRICITY:

- The crossing of wires from one side of the road to other side should not be allowed
- Capacity building of Paschimanchal Vidyut Vitaran Nigam Limited (Noida authority)
- Streets lighting system and its management to be improved by providing control points for operating street lights or by sensor based/ solar lighting system.
- Any electricity poles inside the road / streets should be relocated.

7. ROADS / STREETS:

- No new construction to have balcony projection more than two and a half feet on the road.
- The encroachment of the road by the plinth step should not be allowed in any new construction.
- All the road to be concreted.
- The main spine as it is of maximum width and commercial activity would be designed with pavements signage's to provide a character to this place.

8. IMPLEMENTATION PLAN:

Solid waste management plan

The aim is to identify current problems, creating unsustainable solid waste management, evaluates the potential for the program, and Proposed a solid waste management plan with local authority, local people and available resource for Nithari Village.

9. The Fund mechanism for solid waste management of Nithari, Noida:

State govt:

The gap left can be further bridged using state government funding; state government could also contribute in terms of human resources instead of direct funding of finances.

PPP:

This is very common practice in this nature of project, which is for enriching the urban environment, as the Incentives can be given to the company (in case of solid management, the collection of waste and other functions can be done on this basis and the incentives can be given as the advertisement rights around the whole village.

To maintain the character, the proper space and the hording sizes or design can be provided by the NDA).

10. Utilization of fund (O & M):

- Utilization of the fund shall be linked with the World Bank model of project which involves eight stages in the project, each stage shall be dedicated with certain amount of funds and accordingly the project cycle shall proceed.
- After completion of the project the certain charge to be paid by the villagers to maintain and operate the project
- A part of this fund will come from the incentives given to the private players in the form of advertisement rights of some land to development given by the government (Noida Development Authority)
- Operation and maintenance of park and proposed public place or community space can be given to the same private players

References:

1. *NOIDA MASTER PLAN – 2031*
2. *Delhi master plan 2021.*
3. *Dora, E.C. (2007). Report of the Expert Committee on Lal Dora and Extended Lal Dora in Delhi. New Delhi.*
4. *Ghodeswar, A.S. (1996) Role of Urban Village within the planned development; attitude towards an integrated Urban Fabric. School of Planning and Architecture, Urban Design. New delhi. Unpublished.*
5. *Jain, S (1999). Integration of Newly Planned Development with existing settlement: SPA, New Delhi. Unpublished.*
6. *Lynch, K. (1960) the Image of the City, the MIT press.*
7. *Sengupta, B.K. Planning Legislation and Professional Practice, New Delhi: Institute of Town Planners India.*
8. *Solid Waste and Emergency Response May 2002 (www.epa.gov/globalwarming)*
9. *Municipal solid waste: management in chennai city.*
10. *Chandhoke, S. (1990). Nature and Structure of the Rural Habitants. New Delhi: Concept Publishing Company.*
11. *Greater noida master plan – 2021*
12. *Greater Noida and Noida Extension: Micro-Market Analysis*
13. *Environmental Management Plan for Greater Noida 2021*