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URBANISING THE PERI-URBAN- CHURNING GOLD FROM AGRICULTURAL LANDS: A STUDY OF EAST DELHI VILLAGES, INDIA

Anjana Mathur

**Jagmohan Associate Professor, Department of Geography,
Dyal Singh College, University of Delhi**

**Monica Ahalawat Associate Professor, Department of Geography,
Dr. B.R.Ambedkar College, University of Delhi**

Jag Mohan

**Assistant Professor, Department of Geography,
Aditi Mahavidyalaya, University of Delhi**

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Abstract

The trans- Yamuna area of Delhi, also called East Delhi or *Jamuna Paar*, used to be the one of the most backward areas of Delhi just a decade back – teaming with people of low socio-economic background and often belonging to agricultural or lower classes doing menial jobs. The area as a whole was neglected by the civic as well as the political class. The region, the bread and fruit basket of Delhi, has now been converted into a concrete jungle. Better accessibility through roads, bridges and public transport system has ushered in an era of unforeseen urban transformation. The whole region of trans-Yamuna had 15 villages in 2001 census. All of these were included in the qualitative as well as quantitative study of socio-cultural transformation. The study revealed startling information about the forces behind the land use changes and the resultant transformation in the lives of the people who were farmers till now and living still in the dark ages. Acquisition of private lands by government, mushrooming of private residential colonies and space seeking industries, godowns and automobile service centres, wedding lawns etc. are the most dominant factors changing the socio-economics of the region. Changes in the land use has pushed the farm hands into seeking other livelihood opportunities in the city or start off new business ventures in the village itself or seek work in other villages as farm hands. The change has lead to better standards of living for the residents as well as improved literacy levels. Proper planning of residential areas, industrial areas commercial areas and also development of high end specialised farming for the food security of the city dwellers and skill developmental centres along with incentives, initiation and programming of the residents will go a long way in the sustainable urban development of the region.

Keywords

Urbanization, Land Use, Livelihood, Sustainable Urban Development.

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Introduction

Every day approximately 1000 people move into Delhi from other states to earn a living. This rural-urban migration is not a new phenomenon- it has been there ever since cities came into being. But in a developing country like India, and in the capital city of Delhi, the pace of rural-urban migration has outwitted every other migration. The immediate consequence of any immigration is the need of space creation for the immigrants. On such a large scale of in migration from the countryside, the areas which are affected first and the most of all are the villages located within or just outside the urban limits. It is these villages which provide the immigrants a homely atmosphere at not-so-high cost of living as compared to that in the urban areas. When the living space in the villages falls short of the required amount of living quarters, it is the village agricultural lands which are the first to be converted into housing for the immigrants and also for other land uses like community centers, roads, godowns, etc. “The urban villages are, therefore, most vulnerable to the dynamics of population movement. The countryside bordering the city is most vulnerable to change as it faces the growing pressures of the city to expand into its territory due to shortage of land and manpower. Growth in communication and transportation has only accelerated the rate of change in land use and also in the occupations practiced by the local as well as migrant population in the bordering villages- farming has slowly changed to industries and a farmer has become an industrial worker” (Mathur, A. 2013)

While the lives of people – both the original residents as well the immigrants, have changed drastically in terms of better economic and social well being, what has become of the urban landscape! It has changed into shanty town with rampantly developing slums as well as declining urban agricultural land and fast growth of high concrete structures inhabited by high density of population. This growth of metropolitan cities in the most unimaginable proportions is haphazard and skewed in one direction. There is also no control over the population immigrating into the city.

This unplanned urban growth – in terms of both population densities, land use, occupation – has been given many names- “**Bidonvilles**” or “**Asentamientos**” or “**Campamento**” or “**Favela**” or “**Hooverville**” or “**Villa Miseria**”. “These are a characteristic feature of urbanization process in developing and even developed societies where the urban growth process is marked by friction and difficulties. These terminologies have been given to squatter settlements/ shanty towns in various countries of the world. They refer to the development of illegal and unplanned housing colonies with very poor/unstable structures which have come up on government land or even private land without any legal sanctity. The houses are very closely spaced without any street planning, legal electricity connections, and water supply and sanitation facilities. They normally house migrants from the surrounding or even far off rural or smaller urban areas who have moved in search of better times and livelihood but fail to find a niche in the formal housing systems” (Mathur, A. 2013)

“Although a rural area does not change its land use overnight nor does it change its character quickly- it happens over a period of time. The degree of influence of the urban areas brings about the changes in the surrounding rural areas. The process is known by many names namely- *urbanization* as well as *urban sprawl*. A new concept of *land alienation* was given by J.G. Rice (1978) in his article in AAAG (Annals of the Association of American Geographers) where he defines land alienation as a process by which public land is disposed of by the government and is acquired by settlers for a land use very different from the present one”(4).

In the study area of trans- Yamuna region of Delhi, there were 15 villages which have all been included in this study of land use and socio-economic change.

The issues studied:

- The emerging land uses other than agriculture(1991-2001);
- The drivers of land use change;
- The changing livelihoods (1991-2001);
- Implications of reduced agricultural land producing grains and other food items;
- Need for planned development focusing on food security, self sustenance and economic development of the study area.

The background

The present study is a part of the research done for the doctoral thesis. To delve deep into the subject and to gain a thorough understanding of the issues, a pre-printed questionnaire was used which was first tested in a village of Uttar Pradesh. The data collected as tabulated, statistically analyzed and inferences gathered. But a lot of understanding of the psychology of local people of the villages was understood by just talking to them about matters other than those in the questionnaire.

The Study Area of East Delhi

Like many other cities in Asia, Delhi is expanding fast. “Moreover, it too is surrounded by a populous rural area with productive agricultural land. These are common features of the developing world in general and Asia in particular (e.g. McGee 1991). The phenomenon of land use transformation and the consequential occupational change is a feature typical of a Developing country and is much more marked in a country like India, where more than 15% of the world’s population is residing” (Mathur, A. 2013).

The Emerging Land uses:

- *A direct relationship was found to be in existence between the distance from the urban centre/ main pucca road and the prevalent land uses in the villages.*

Table 1. Dominant Land uses with variation in Distance from New Delhi

S.NO.	Village	Distance from urban center (kms.)	Major typology of Land Uses along with farming
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1	Badarpur khadar	18	Only conventional types of farming with wheat, rice pulses and gram
2	Baqiabad	14	Unauthorized settlement,
3	Biharipur	14	Godowns, Industries
4	Garhi Mendu	14	Small scale industries, Godowns, Unauthorized settlements.
5	Khampur Dhani	18	Farming, a few godowns and factory
6	Pur Delhi	16	Only Farming
7	Pur Shahdra	15	Only Farming
8	Sabapur Delhi	15	Farming, police training camps, unauthorized settlement
9	Sabapur Shahdra	15	Farming, unauthorized settlement
10	Sherpur	11	Illegal colonies, factories, dairies farming
11	Tukmirpur	14	Illegal colonies, factories, dairies, farming
12	Mandoli	14	Illegal colonies, factories, dairies, farming
13	Shakarpur Baramad	12	Illegal colonies, factories, dairies, farming
14	Chilla Saroda Khadar	12	Illegal colonies, factories, dairies, farming
15	Shamaspur	11	Illegal colonies, factories, dairies, farming

Source: District Census Handbook, 2001 and personal survey, 2005, 2010

- “While unauthorised settlements are found in almost all the villages, factories and godowns of cereals, fodder, banana, other fruits, readymade garment manufacturing units, small factories making soap, detergents etc., cloth dyeing units, small weaving mills making rugs out of rags, paper and bag printing units, are the other causes of change in land use in the villages.
- These villages are situated close to the urban settlement and, therefore, are preferred by the city dwellers for their godowns and factories. Brick kilns were another cause of land use change earlier but have now paved way for construction of residential colonies, etc. the highest variety and concentration of urban land uses are found close to the main urban city like Shamaspur, Chilla Saroda Khadar, and get spread out and diluted as one moves out from the city. The villages further away have other causes of land use change or no change at all. e.g. Badar Pur Khadar Baqibad, Pur Delhi and Pur Shahdra .

Types of land uses observed during the personal survey

- Just as we move out along one of the main arterial roads –either the Wazirabad road in North east district or the GT road from ISBT Kashmere Gate towards Ghaziabad, on either side one finds **1.** newly developed colonies; **2.** a large amount of vacant land; **3.** Commercial quarters which have recently developed catering to the newly developed housing colonies. Also prominent along the main roads are the presence of **4.** cold storages; **4.** Godowns; **5.** garbage dumps; **6.** sewage disposal plants; **7.** industrial townships; **8.** places for newly developed ministries or sections in the government; **9.** Transporters; **10.** property dealers; **11.** closely spaced houses with more than 3 stories; **12.** fruit and vegetable markets sprawled on the main road along the fields where they are grown. In other words, all the uses which any new housing cluster may require spring up near the main arterial roads.

The existing land uses can be categorized according to their position along the roadside from rural to urban.

- **Agriculture of staple crops:** agriculture still holds an important position in the villages across the Yamuna. These are the villages farthest away from the city as well as the road. In the villages extreme north of the study area, there is wheat and fodder

in the rabi season and paddy and fodder in the kharif season. HYV seeds are generously used for both wheat and paddy. Better irrigation, ground water at a very little depth, chemical fertilizers, pesticides etc. and increasingly higher accessibility to the local grain markets have kept the agricultural traditions alive in the villages which are a bit away from the main roads. Percentage of agricultural land uses is adversely correlated with accessibility.

- **Horticulture/floriculture:** Cultivation of flowers and vegetables is clearly expanding owing to the demands from the city and very high prices now which these two agricultural products fetch. The most common vegetables grown are the cauliflowers, green beans, radishes –both white and red, carrots, pumpkins, spinach and other leafy vegetables, many other vegetables which grow in climbers like gourd, bitter gourd, turai. With the advent of better technology and knowledge, newer and better paying varieties of flowers are now being grown besides marigold and roses which had started the floriculture in and around Delhi villages. Also to be found in these villages are crops of gladioli, rajnigandha and even mogra which fetch high prices in the flower markets. This type of land use has a direct link to the urban market nearby and definitely driven by market demand for a particular type of flower and the price it fetches. The demand for flowers is maximum during the wedding and religious seasons. Location of urban market nearby has clearly been the push factor behind flower cultivation. The crop grown is perishable and has to be consumed within hours of it being harvested. The revenue generated per unit area of land is much higher than the amount generated from staple crops. Also more number of crops can be generated from the same piece of land as compared to the staple crops.
- **Forest/ common land/ orchards:** these land uses have been clubbed together for their small size and somewhat similar appearance. This is the land which has been left over from the village main land. None of the villages in trans-Yamuna area had forests except for Garhi Mendu. This land is usually covered with thick bushes and shrubs, which serves as a pasture for the village livestock, source of firewood, a place to dry cow dung cakes. But most of the villages have been left with little or no common lands. Most of the villages' vacant lands have been acquired for developmental purposes. These lands are many a time used as sites for location of dispensaries, hospitals or schools. Orchards in the villages are usually kept by the people from outside who have bought land just for production of certain crops like grapes, vegetables and even eucalyptus trees.
- **Vacant land:** this is unused land with no clear land use. Often it is in the middle of conversion. Rising cost of agricultural inputs force many farmers to leave their lands barren and uncultivated so as to avoid the loss.
- **Infrastructure:** The infrastructure is generally owned and run by the government agencies. It includes roads, canals, levees, dams, garbage dumping grounds, water treatment plants etc. The trans-Yamuna region of Delhi has important highways as well as important roads like the Wazirabad road, the GT road, NH24, a garbage dump near Ghazipur, wholesale markets of Delhi in Ghazipur near the Delhi-UP border. These markets include those of – Fruit and Grain, chicken, meat, poultry and egg market, a slaughterhouse, paper market, and also flower market, a major transport junction of Anand Vihar railway station, ISBT and Metro stations have also been developed. Metro stations have been developed all along the main arterial roads of Vikas marg and GT road. A new road bridge is coming up in the extreme north of east

Delhi which shall replace the old Wazirabad bridge. Approach roads which are still under construction are being built on the lands acquired from the villages of Garhi Mendu, Tukmirpur, Sherpur and Sonia Vihar

- **Built up area:** There is a large heterogeneity in the types of structures found in the built up areas in the trans-Yamuna. This category includes the planned as well as the unauthorized colonies, factories, godowns, service stations of various automobiles, schools and hospitals, etc. Unauthorized colonies are to be found in the villages near the road going to the Tronica City as well as along the Pushta road. Much of the residential development which is visible today has taken place in the agricultural fields of the villages of Sherpur, Tuqmirpur, Baqiabad, Etc. closer a village is to the approach road more is the agricultural land use transformation rate in the village” (Mathur, A. 2013)

Drivers of Land Use Change

- **Demographic** “Every change in population is an aftermath of the interplay between both natural and migratory increase. In Developing Countries, this is more so. In the rural periphery of Delhi, a massive population increase occurred between 1971-81, a result of industrialization and urbanization which offered higher incomes and job security to the jobless and underemployed rural youth.
- **Social** Land use decisions are ultimately a matter of choice. The Society in which people live has a significant role in type of land use carried out on a particular piece of land. In India, so in Delhi villages, caste still plays an important role, though in urban India it is fading. In rural areas it is still deep rooted and dominates every activity of life. Thus, the ownership as well as all land transactions are tilted towards the higher castes, the original land owners. The elements of illiteracy among land owners, dowry for daughters, alcoholism and disintegration of joint families force a land use change. Many a times land is sold to pay off gambling and drinking debts. Buyers are mostly outsiders and they purchase land for the construction of colonies or farmhouses. Within a gap of few months land use change takes place.

Disintegration of families from joint to nuclear has also transformed land as sometimes the share of land is too big to handle or too small for agricultural practices (table 2). In both the cases land has been sold. Today the youth of the family want to reap the benefits of assets fast and also do not wish to toil in the fields. The table given below gives the information collected personally, through the questionnaire survey, in the 15 villages of Trans Yamuna, Delhi.

Table 2 Sale of Land Due to Family Type

Family type	Number of families sold land	Land size sold by them (acres)		
		3-4	4-5	5<
Joint	8 (30.76%)	5	2	1
Nuclear	18 (69.24%)	10	2	6
Total	26 (100%)	12	4	10

Source: Personal Survey

During the survey it was observed that around 30 percent of the land owners sold their agricultural land due to the large family size and small land holdings to sustain their family. After selling land they diversified their economic activities from primary to secondary and tertiary activities. 70 percent of the respondents were forced to sell land because of small family.

- **Economic** Economically, farmers and landowners no longer dominate rural areas around cities, in the terms of providing employment. Agriculture is being restructured and farmers are adjusting to national and international processes of change, which are changing the products produced by the

landowners. This adjustment often takes the form of generating new sources of income from non-agricultural activities, either on or off the farm.

According to the theorists of urban geography, maximum development is occurs close to the urban areas and also near the arterial transport lines going out from the city. In the same manner it seems that development has taken place in the rural areas of east Delhi. The areas close to the highway and main roads are the ones that have attracted maximum urban industries. The reason is simple that a roadside location makes it economical for transportation and storage of goods. The main impact of increased and better connectivity can be seen as one moves out from the city to the countryside. Agricultural land has been either converted or is in the process of conversion to other land uses like factories, godowns, farmhouses, mills processing rice and pulses, automobile workshops, cold storages etc. The prices of agricultural land close to the roads and those away from it differ and eventually decides the later economic status of the land owner.

The demand for land has also risen post the government policy to move out industries from within the urban areas. The demand has sent the land prices skyrocketing. Also the demand for a higher and increased money supply into the rural economy has been a major cause of land use change. The rural people, who have never had so much money on their hands, now have their hands full of it. Big luxury cars, mansion sized homes of land owners also force other landlords to sell off their lands. There is also an increasing demand for luxury items like music systems, big televisions, branded clothes, shoes and car accessories. The youth of the village splurge the money they earn by selling land on goods like these. Want of more land in other states with the money derived from land sale here is also a driving force of land sale in rural Delhi.

- **Political** Rural Delhi is a hub of political activities. Every time during an election each and every political party, whether local, regional or national, tries to woo rural voters through land related issues. With the spread of urbanization, all the land development agencies are under serious pressure, and looking for new space for development. This acquisition of land has raised the price of land to more than Rs. 24 lakh (Table 4.3). Once the land has been acquired the owners receive compensation of anything between rupees 24 lakhs to 30 lakhs per acre depending on location, accessibility from the urban area. These rates have been revised yet again post the Yamuna Expressway acquisition of land form villagers.

Acquisition or the government prices also determine the prices for private buying and selling which are usually higher than the acquisition prices. These are also a big attraction to land owners look forward to selling their land to private individual for either speculative purposes or any other use. Farm houses construction is the main reason for outsiders buying land for personal use.

Table 3 Price of Land (per acre) since 1970: A Comparative Analysis

Year	Property Dealers (in Rs.Lakhs per acre)	Government Rates (in Rs.Lakhs per acre)
1970-1980	2	.5-1
1980-1990	4-5	2-3
1990-2000	20-25	16-22
2000-2011	30-35	22-25
2011	70-75	60-65

Source: Property Dealers Association and Land Revenue Department, NCT, 2012

- **Institutional**

(i) *Land Acquisition by the Government*: Delhi Land Reforms Act, 1954 gives power to the Delhi government to acquire land for the development processes. This development was in the form of construction of hospitals, schools, shifting of industries and other projects. In lieu of acquired land, land owners are supposed to receive compensation according to prevailing market rates.

(ii) *The role of technology* better seeds and higher productivity from the same piece of land has forced the farmers to opt for either horticulture or for colonies development so as to get high returns within a short span of time. While some farmers have benefited, as have arguably urban food consumers who may pay lower prices for their food, the farmers that have benefited have been the already resource rich farmers, those with the biggest farms, best agricultural land and most finances. These farmers were the ones who could afford to invest in the new fertilizers, pesticides, machinery and seeds. The increased demand turned the shallow wells dry. The affluent farmers have turned to using deep tube wells for irrigation further depleting groundwater resources. The monoculture practices, herbicides and pesticides of the green revolution have wiped out secondary food sources that were vital to rural people's nutrition, edible plants that grew in and alongside cultivated fields such as taro, water spinach and water chestnuts" (Mathur, A. 2013)

Changing Occupational Structure

The land use change in the study area has had an immense impact on the livelihood situation of the residents. Farmers by birth or by choice have had to abandon their source of earning by adopting either something entirely new or somewhat similar occupations. Many of the residents whose large part of agricultural land has been acquired or has been sold, choose to earn their living by working outside their village and have to commute using either public or private transport. Some have also found a way to earn living by choosing businesses which can survive in their own village without a need to daily commute outside the village. Also many villagers whose children have got educated choose not to work as farmers- they prefer to work to earn a living rather than toil in the fields. Thus, many occupations have emerged post the land use changes.

The change in occupational structure of the study area villages can be studied by dividing them into two- **internal employment and external employment opportunities.**

- **Internal employment** refers to those jobs which have been made available to the local population in their own village or just adjacent village and one which does not require any mode of transport to travel to the work place.
- **External employment** refers to those jobs which the local population of the village has been able to secure in places far off from their village of residence. This type of job requires the person to travel from his village to some other place using some mode of transport whether personal or public.

The given classification in table 3 is important as it lists all those sectors of the economy where jobs are available to the residents of the village.

Table 3. **The Changing Livelihood Opportunities In East Delhi Villages**

INTERNAL JOB OPPORTUNITIES	EXTERNAL JOB OPPORTUNITIES
Shop	Government jobs
Trade/production of construction material	• Administration
Construction	• Utility (electricity, jal board, municipality)
Small/medium scale industry/cloth dyeing unit	• Public sector undertaking like banks, railways, DTC, schools and colleges
Workshops/repair shops	Private Commercial Activities
Transport (buses, mini trucks)	Own Industry/ Cloth Dyeing/stitching unit
Property dealing	Marketing of Agricultural Produce
Rent and leasing property	Shop or other retail outlet
Dairy	

Horticulture, floriculture, nurseries

Schools, day care centres

Party lawns

(Bentinck, pp 97, 2000 and personal survey)

The Changing work profiles- observations

- Over a period of 20 years from 1991 -2011, there has been significant change in the occupations practiced by the people of trans Yamuna villages in Delhi. The maximum changes that have taken place in the occupational profile is in the villages of Shamaspur, Chilla Saroda Khaddar, Shakarpur, Garhi Mendu, Tukmirpur, Sherpur. The villages lie on either side of NH24, or Wazirabad road or GT road. It is the distance from the main road that has brought about all the transformation.
- *“The village of Badarpur Khadar, located in the extreme north of the study area, does not even have electricity connection and till very recently did not even have a primary school. The main reason for this state of undevelopment was its inaccessibility. There is no pucca road leading to the village and no public transport. On visiting the village, it seemed that one has come into some bygone era. The literacy rates are far too low; wheat, rice, jowar, chana etc are the only talk of the residents. The only time these villagers move outside their village is to sell their produce at the local mandi and then it was back to the usual routine. It has been because of this aloofness from the city dwellers that almost no land use change has occurred in the last 30-40 years. People, who sell their land, sell it to their own fellow villagers and the buyers also use the land for nothing else except agriculture. Many villagers thought that their village lies in UP. All the villagers sleep just after sunset and get up with the day break do their daily chores so that they can use the day light to the maximum. Tractor engines are used to do grinding work. It is only very recently that a few young boys who have got educated have now got jobs elsewhere that the villagers are coming to know of life outside the village and other avenues of working” (Mathur, A. 2013).*
- The villages in the extreme north of the study area seem to be the slowest in the transformation of occupation. The connectivity to the main road has hampered the movement of villagers from Badarpur Khadar, Pur and Sabapur to Delhi urban areas.
- The Garhi Mendu village is the middle of the stages of total urbanization. The closeness to the Yamuna and fertile soils have made Garhi Mendu attractive to the agriculturists, industrialists as well as horticulturists. All these are found in equal proportion in the village. The population- both females and males- are engaged in small household industries of soap making, papad and pickles, cloth dyeing, printing, buttonholing and also printing of posters, cards etc.
- The villages of Tukmirpur and Sherpur have also been subjected to the transformation forces. Located just off the main Wazirabad road on a pucca road going towards the Tronica city and Baghpat areas in UP, these villages have been the first to change their livelihoods. Proximity to the urban areas of Gokalpur, Delhi University and Yamuna Vihar and also urbanizing Karawal nagar and Dayalpur made it easy for Tukmirpur and Sherpur to change.
- The earliest transformation which took place in the villagers livelihood is that of taking up of government jobs by the local population with DTC as bus drivers and conductors, lower clerical and class IV jobs of mali, sweeper and also of sales and helpers in the nearby markets and also in Daryaganj and Chandni Chowk. – a cyclable distance or with the MCD, Delhi Secretariat, DDA and the Parliament.

- Development of local markets in Bhajanpura, Seelampur, Yamuna Vihar and also in Seema Puri seem to have started a wave of occupational change amongst the local populations and also amongst the migrants who have started their business/shops here.
- Females of the migrant households have started to work as domestic help, cooks and even nurses in the nearby up- market colonies and also in the areas a bit away, using the public transport.
- A special characteristic of the livelihood situation in these villages is that there are *multiple sources of earning practiced* if it is a large family. Each family tries to maximize their earning using diverse fields and works. “A migrant family in Tukmirpur had a school to run by the educated ladies of the family, the male had a property dealing business, one of the sons had a shop selling stationery items in the village. Similarly, there were many village elders who had all their life just done agriculture. Now due to the pressures of acquisition by the government, they have been forced to start dairy farming, shops and also property dealership”(3). “Many in the villagers are opting for government jobs for the stability of income. Less educated people have started to work in the clerical staff of water supply, electricity department, fire department or any other government department. The fear of unstable income has forced the migrants as well as the local population to look for other sources.
- Many families in Garhi mendu have bought oxen or have a bhainsa gaadi (buggi) which they use to sell of sand from the Yamuna river bed, illegally. These buggies, as they are locally called, rake in huge profits as there is no initial investment other than that of the oxen”(Mathur, A. 2013).

Implications of reduced agricultural land

On just observation, everything seems to be just fine- even better than what used to be. But this rampant development has both negative and positive connotations attached to it.

The positive implications:

- Economic prosperity of the local population as well as of the migrants
- Better literacy rates and improved female literacy in particular
- Better roads and infrastructure due to colony regularization drives by the government.

The negative implications:

- The endangered food security situation of the city as more and more agricultural land is being consumed for either growing cash crops or for developing colonies. This has led to a shortage of vegetables and food grains in the city which has made the city totally dependent on the surrounding states for fulfillment of its daily needs of food and milk. The concept of self sustenance has been totally lost behind the veil of economic prosperity of the farmer.
- Declining ground water situation in the rural areas due to excessive water extraction for irrigation of water demanding cash crops;
- Increasing numbers of houseless population in the city due to uncontrolled immigration of poor rural population into the city.

Need for planned development focusing on food security, self sustenance and economic development of the study area

- The need of the hour is to bring into action the Master Plan of Delhi. There are separate land uses demarcated for each piece of land. These plans have to be enforced strictly for the planned growth of the city.

- As the agricultural area is constantly declining, there is an urgent need to maximize the production of food crops from whatever area is left. The switchover to GM crops has to be done for at least the staple crops so that the city does not suffer from food shortage and the grower gets maximum returns for his better economic prosperity. The countries of China, USA and Brazil have all maximized their food production using the GM food crops. Adoption of GM crop is also likely to solve the problems of malnourishment which is rampant among the females as well as infants in the rural as well as slum population of the Developing countries.

An Approach towards Sustainability in Dynamic Territories

- “Pattern of population distribution and growth in a city is related to a number of factors: patterns of land use, the availability and price of land or residential property, and the accessibility of employment opportunities and urban services. If the centripetal force of the past spatial growth and distribution were explained by the last factors, the actual centrifugal tendency is associated with the scarcity of land for new residential constructions and its consequent appreciating value in central areas. The less congested peripheral zones provide more affordable housing possibilities, as well as more accessible sites for squatting. The expansion of the urban periphery can be explained as the relationship between planning attempts made by the Delhi Development Authority and private initiatives and responses. While planning for the main city, planners must be regardful towards the management of the natural resources in this transitional region and also acknowledge the socio-economic and psychological needs of the population residing in this region. Specially, considering the rapid urbanisation and growth of Delhi, the rapid transformation of once-sustained villages become of major concerns.
- Sustainable Development from an environmental perspective, strikes for a balance between human activities with the environmental resource base within an urban system, whereas, urban development calls for physical and human growth and restructuring of urban systems. Urban sustainability, therefore, is bringing the two together. But the key point here is that each of the main components - human activities, environment resources, population growth, and urban structure - is constantly changing, not only within the Cities but also at their suburbs. Castells (2000) talks about dynamic sustainability, which is ‘both conservation and improvement oriented leading to an enhanced quality of life including social justice....Sustainability of cities should not be simply the conservation or preservation of the conditions of the reproduction of what it is, but a dynamic production of situations that addresses new issues and bring afore aspirations’ (ibid. 2000, p).
- This is more in the lines of Norgaard’s (1988) *sustainability of changing interactions* between people and their environment over time. The dynamic nature of the city system is well accepted. The processes in it are dynamic too. But the conditions and extent of dynamism varies from culture to culture. This change takes place, mostly, in a gradual manner. Here, the adaptive response by people to changes comes into focus. These adaptive responses are required for the dynamic nature of development. Here, one needs to note that the traditional societies with their environment are often more sustainable than the interaction of modern society because the traditional system (community, culture) are coevolved (with other eco-systems) and more importantly, coadaptive (to the changes in their system as well as others’). But it is rapid change that is dangerous to any kind of systems, traditional and, more strongly, the modern

societies. Sustainable Development in this paper will be defined as **‘the coevolutionary and coadaptive approach to development for communities where the actors of the community mobilise and practice ‘intelligent’ use of natural resources to ensure minimal environmental externalities, social coherence and economic prosperity’**. Here, sustainability is not only seen as a goal but a means to the end. The actors include all levels of stakeholders, from individuals, households to local government. ‘Intelligent’ use should involve constant assessing of their practice, ethical judgments of the conditions as well as the benefits and will enable them to learn from their own as well as neighbor's mistakes. This is also to ensure less or decreased use of nonrenewable resources from the outside world of their region, to achieve low ecological footprint, and also to encourage optimal use of locally available renewable resources. This ‘intelligent’ use will be the key point behind any community’s sustainability in the long-term. The planning for the interface should be of importance not only to ensure continued existence of the villages but also for the main city that has embedded socio-cultural relationships with its interface. The planning policies should aim for alternative livelihood policies in the villages falling in the interface. A separate department for Rural Development accounting for the interface - structural as well as livelihood changes - should be established. A city-state like Delhi needs to conserve its rural-urban interface, its socio-cultural entity, in order to sustain the city” (2).

Fig. 1 Location of the Study Area

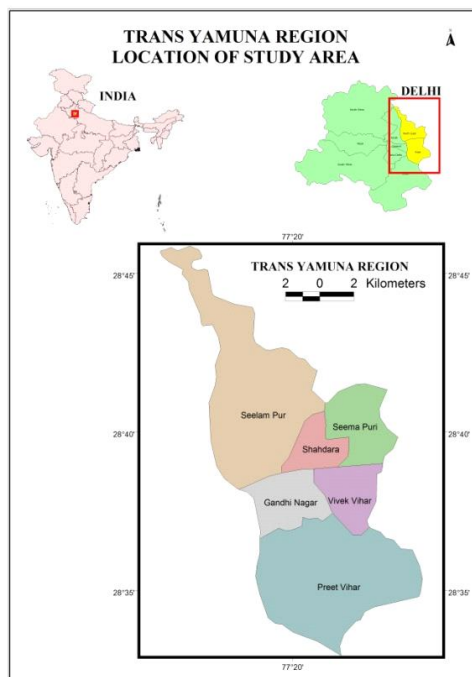
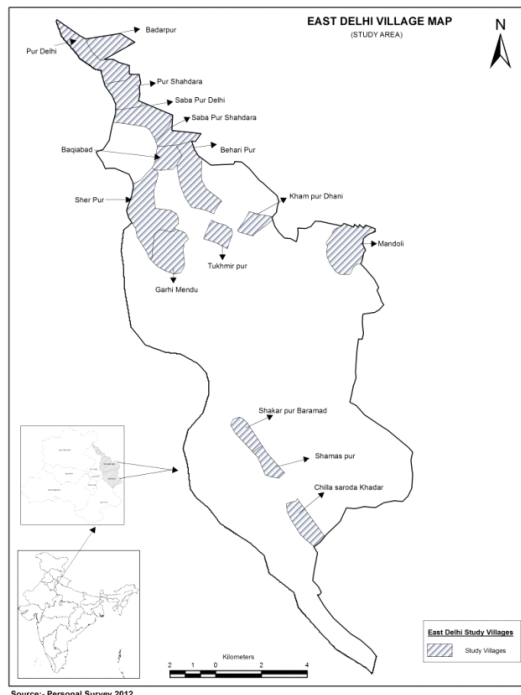


Fig. 2 The Sample Villages



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