

## RESEARCH NOTE

# The Context of Uncontrolled Urban Settlements in Delhi<sup>1</sup>

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### Summary

In developing countries, more than half of the urban population lives in unplanned settlements where their quality of life is substandard and even inhuman. Delhi, the capital city of India, is a prime example as more than half of its population resides in uncontrolled settlements despite modest planning intervention since the inception of its first master plan in 1962. The aims of this study are to review the rapid urbanization and proliferation of uncontrolled settlements in Delhi and shed some light on the characteristics of households and housings there. After reviewing urban development with spatial growth and demographic dynamics, various types of settlements are discussed and three types of settlements are selected for case studies, viz. an unauthorized colony, an urban village and a notified slum area. The data used includes a survey of approx. 225 households, interviews with various stakeholders and official census data. The authors' analysis reveals wide variations in socio-economic and dwelling-unit characteristics among different types of settlements. The results show a lack of physical and social infrastructure across the settlements. The households in the slum settlement have a very low income level, while households in the unauthorized colony and urban village have relatively high amounts of income. Urban infrastructure provisions are identified as a key area for planning intervention in order to integrate these settlements into sustainable residential developments. Besides such provisions, economic interventions are also necessary for slum households. This paper raises some important issues concerned with improving conditions in uncontrolled urban settlements.

Manuscript received on 2010-05-10, accepted on 2010-09-07  
Keywords: housing, slums, urban planning, planning policy, Delhi, India

### Introduction

Today, a third of the world's urban population lives in slum and squatter settlements, i.e., approx. 1 billion people, a figure that is expected to increase to 2 billion by 2030 if no appropriate action is taken (UN-Habitat 2003). Estimates made by UN-

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<sup>1</sup> An earlier version of this paper was presented at the Asia Planning School Association (APSA) Congress held in Ahmedabad, India on 24-26 November 2009. The authors would like to thank two anonymous reviewers for their valuable comments. As usual, all errors and omissions remain with the authors.

Habitat indicate that more than half of the world's slum population lived in Asia in 2005. In India, 44 per cent of urban households are classified as slums (UN-Habitat 2008). According to census data from 2001, Delhi's urbanization level was 93.01 per cent, and numerous studies and governments documents reveal that more than half of these residents live in unplanned settlements, including slums, squats and unauthorized colonies (Dupont, Tarlo et al. 2000; Sivam 2003; Kumar 2006; Kumar 2008). This data also reveals chaotic urbanization traits in Delhi.

The purpose of this study is to review urbanization and uncontrolled urban-settlement traits in Delhi. It also sheds some light on the overall characteristics of settlements, households and housings in uncontrolled urban settlements in Delhi and presents some concluding remarks regarding planning intervention.

This exploratory study is performed in two stages. Firstly, it reviews rapid urbanization and the proliferation of uncontrolled urban settlements using secondary sources. Secondly, it conducts a primary survey of households in selected settlements to update the characteristics of settlements, households and housings. Three types of uncontrolled settlements – an unauthorized colony, an urban village and a slum – are selected from a total of seven different types as representative settlements since they present broad subcategories of all the types of settlements existing in Delhi. We derive subcategories in terms of planning interventions, the degree of legality a settlement has (its “tenure security”) and its stages of evolution. In short, the three cases are selected based on three broad groups of uncontrolled settlements, and particular settlement areas are selected due to their clear typology, which has prevailed throughout their evolution process. These settlements have not been explored by urban researchers so far. This study uses 225 households from unauthorized colony, urban village and slum for a basic statistical analysis, which included t-tests and chi-square tests.

## **The urbanization of Delhi**

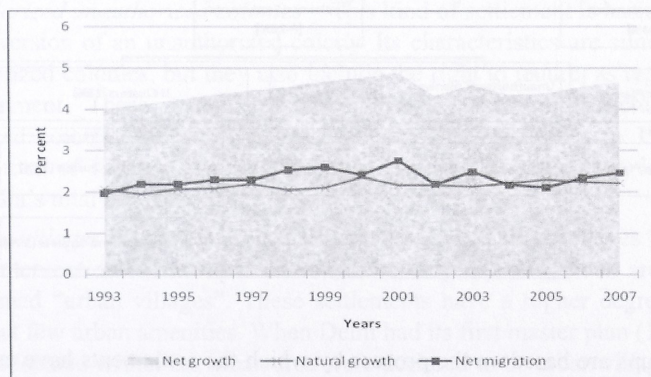
Delhi's urban population grew from 1.4 million in 1951 to 12.8 million in 2001 (Table 1). Notably, net in-migration contributed slightly more to its population growth than its natural growth did, as shown in Figure 1 (Delhi 2009). Delhi has also experienced urbanization in the form of urban sprawl, with the core area experiencing less population growth than the periphery, both between 1981 and 1991 and between 1991 and 2001 (Dupont, Tarlo et al. 2000; Sivaramakrishnan, Kundu et al. 2005). The core area's population grew at the rate of 3.59 per cent from 1981 to 1991, while the periphery grew at a rate of 3.8 per cent. The core and periphery areas grew at the rate of 3.09 and 4.08 per cent respectively between 1991 and 2001. In short, the trend in population growth shows that Delhi was a growing city (Kumar 2006).

**Table 1** Growth of Delhi's population, 1951-2001

Years	Total population	Total urban population	Urban pop'n as % of total pop'n	Decennial urban growth %	Annual urban growth rate %
1951	1,744,072	1,437,134	82.40		
1961	2,658,612	2,359,408	88.75	64.17	5.08
1971	4,065,698	3,647,023	89.70	54.57	4.45
1981	6,220,406	5,768,200	92.73	58.16	4.69
1991	9,420,644	8,471,625	89.93	46.87	3.92
2001	13,782,976	12,819,761	93.01	51.33	4.23

(Source: Census of India 2001: 15)

Since 1951, Delhi has expanded from 201 sq km to 792 sq km. This has been due to numerous events, with major expansions taking place during Delhi's re-establishment as the capital of British India and in the aftermath of partition in 1947. The enactment of the Delhi Development Authority (DDA) Act of 1957 and subsequent planning intervention caused the city to expand to 326.55 sq km in 1961, which amounted to a decennial growth rate of approx. 62 per cent at the time. In the 1990s, it grew to 624.28 sq km and is presently spread over 792 sq km (about 53.41

**Figure 1** Estimates of annual population growth in Delhi, 1993 - 2007

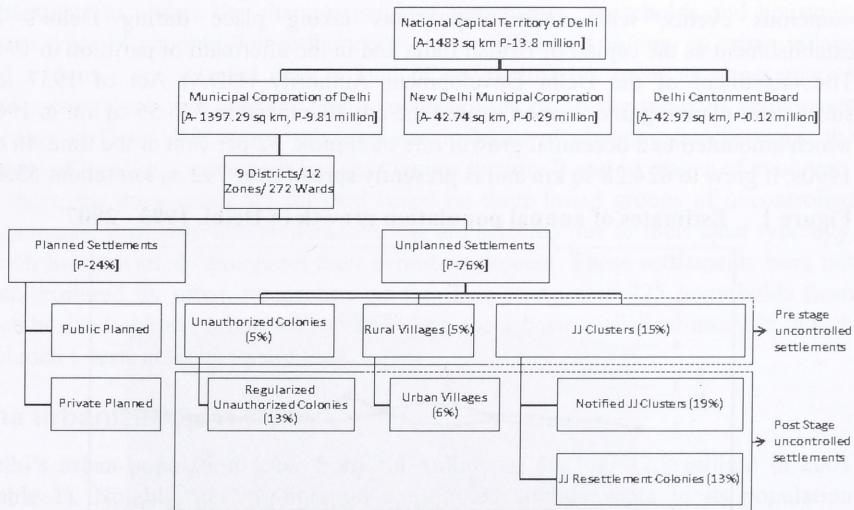
(Data source: Economic Survey of Delhi – 2008 - 2009)

per cent of the area is now urbanized). It is estimated that the entire area under the National Capital Territory of Delhi (NCTD) will be urbanized by 2021 (India 2007).

## Typology of settlements

The settlements are differentiated on the basis of tenure security, dwelling conditions, infrastructure status and the degree of planning intervention. There are various studies which explicitly categorize the typology of settlements (Kundu 2004; Dutta, Chander et al. 2005). The National Capital Territory of Delhi (NCTD) is controlled by three governing agencies: the Municipal Corporation of Delhi (MCD), the New Delhi Municipal Corporation (NDMC) and the Delhi Cantonment Board (DCB), as shown in Figure 2. The MCD is one of the world's largest municipal corporations. Its settlement pattern is broadly divided between planned and unplanned settlements. The unplanned settlements, which are the main domain of this paper, consist of seven different types with three subgroups, as shown in Figure 2.

**Figure 2** Types of settlements in Delhi



The subgroups are based on the process by which the settlements have evolved: (a) the unauthorized colonies and regularized unauthorized colonies, which are in the same subgroup because they share the same evolutionary pattern, (b) the urban villages and rural villages, urban villages basically being a “reincarnation” of the rural village, and (c) JJ clusters,<sup>2</sup> notified slum areas and JJ resettlement colonies. JJ clusters are either slum areas or places in which people from elsewhere have been resettled, hence the name “JJ resettlement colonies”. These three subcategories have

<sup>2</sup> JJ stands for the Hindi words *jhuggi jhopdi*, a colloquial term for a hut built by the poor.

similarities based on their evolution as well as other characteristics such as their environment and building conditions. However, they also possess certain dissimilarities as regards tenure security and planning intervention. A representative settlement from each category was therefore selected for the case study.

*Planned settlements* – These settlements are the outcome of planning, either by the DDA or private agencies. Although the planned development of the city was started in the early 1960s, only 24 per cent of the population actually lives in such planned settlements today. These planned developments may be divided into public and private areas.

*Uncontrolled settlements (unplanned settlements)* – As discussed above, there are broadly three categories of uncontrolled settlements and a total of seven types of settlements. Each one will be discussed here.

(1a) *Unauthorized colonies (UAC)* – These settlements developed on agricultural land by illegal means, viz. land assembling, division and disposal. They neither possess planning permission nor building permission, hence the dwellings are below standard and rarely have any adequate physical or social infrastructure. These settlements have a lesser degree of tenure security and minimal urban amenities. In 1993, there were 1,071 unauthorized colonies which are still in the process of regularization. It is estimated that about 0.74 million people that is approx. 5.7 per cent of Delhi's inhabitants live in this kind of settlement (Government of the National Capital Territory of Delhi 2009).

(1b) *Regularized unauthorized colonies* – This kind of settlement is basically a more advanced version of an unauthorized colony. Its characteristics are similar to those of unauthorized colonies, but they also include the right to tenure, as regularized by the government. These settlements also have a better infrastructure than an unauthorized colony. The Government regularized 567 colonies in 1977, and at present, a total of 1.76 million people live in this type of settlement, i.e., 12.7 per cent of Delhi's total population.

(2a) *Urban villages (UV)* – These settlements existed as rural villages prior to any planning intervention. After rapid urbanization, they fell into urban areas, so they were renamed "urban villages". These settlements have a higher degree of tenure security, but few urban amenities. When Delhi had its first master plan (1962), about 20 villages located within the urban area were declared to be urban villages, a figure which has now grown to 135. A scheme to improve civic services was started by the Delhi Development Authority (DDA) in 1979/80 and then transferred to the Municipal Corporation of Delhi in 1987/88. The urban villages are home to around 0.88 million people, i.e., approx. 6.4 per cent of the city's total population.

(2b) *Rural villages (RV)* – About five per cent of the population live in rural villages. It is estimated that all these settlements will be urbanized by 2021. The characteristics of rural villages are similar to other part of rural India in terms of spatial structure and socio-economic characteristics of households.

(3a) *Jhuggi jhopdi clusters (JJ clusters)* – These clusters of settlements mostly arose by encroaching on public or private land. The condition of the dwellings is extremely poor and rarely do any urban amenities exist. The inhabitants of these settlements fear eviction and have an extremely low income, so investments to improve their living situation are rarely made. A survey conducted by the Government of Delhi in 1990 estimated that around 260,000 households were located in 929 JJ clusters (Government of the National Capital Territory of Delhi 2000). These type of settlements currently house 600,000 households in 1,071 JJ clusters, which is about 2.07 million people, or 14.8 per cent of Delhi's population.

(3b) *Notified slum areas* – These settlements are an improved version of JJ clusters. The improvements took place in the form of tenure security and some urban amenities, but the residents still live in very poor conditions. At present, 2.66 million people live in such slums, which accounts for 19.4 per cent of the entire population of Delhi.

(3c) *JJ resettlement colonies* – The resettlements took place in the 1970s by relocating squatters and slum households from the heart of the city to its periphery in order to improve their living conditions. The resettlements were mostly undertaken on the periphery and hardly involved any integrated mechanism of economic and social habilitation (Schenk 2004). Around 180,000 JJ cluster households were resettled by the DDA between 1975 and 1977 and 26 new JJ resettlement colonies were set up. Between 1979 and 1980, 44 JJ resettlement colonies were provided along with improved basic civic amenities. Between 1988 and 1991, the DDA transferred these settlements to the MCD. Presently, all 44 JJ resettlement colonies have a piped water supply and sewerage system. The total estimated population is 1.7 million, i.e., about 12.7 per cent of Delhi's population.

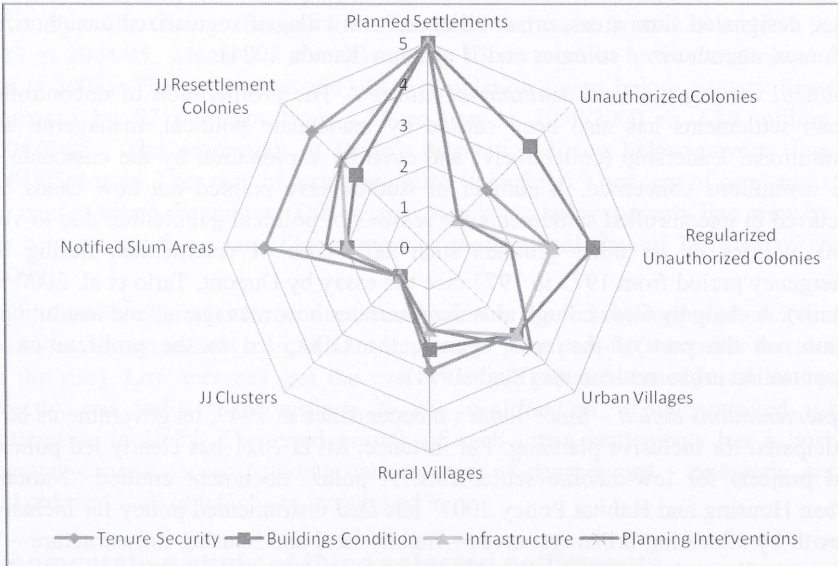
The characteristics of these settlements are further elaborated by Figure 3 based on tenure security, dwelling conditions, infrastructure status and planning interventions. This figure presents a tentative level of various urban characteristics based on published documents and is not grounded on any empirical study. It shows the variation in urban characteristics, with the lowest being in JJ clusters and the highest in planned settlements. Each settlement possesses unique characteristics, which calls for individual studies to be made to get a clearer overall picture, otherwise we may be misled. This particular study explores an unauthorized colony, an urban village and a slum settlement.

## **Causes of uncontrolled urban settlements**

The high number of uncontrolled settlements in Delhi is a result of the increased gap between the demand for and supply of land, housing and allied infrastructure. On one hand, Delhi's explosive population growth and rapid urbanization have accelerated demand, while on the other, the public monopoly on the supply of urban land has reduced the supply of serviced land. In addition to this, low income among

the inhabitants has made urban resources unaffordable for the urban poor and caused urban settlements to proliferate uncontrollably. Numerous studies in addition to our own have revealed this settlement trend, which has taken place despite the government's good intentions (see Pugh 1991; Srirangan 2000; Sivam 2003; Kumar 2008). Some important causes of this proliferation are discussed below.

**Figure 3 Vital characteristics of settlements in Delhi**



## High demand for land

*Explosive population growth and rapid urbanization* – Delhi has experienced exceptionally high population growth and spatial expansion as discussed earlier (see the urbanization of Delhi). UN-Habitat's latest study shows that the average annual growth rate in large cities in developing countries was 1.8 per cent in the 1990s (with the exception of a few Chinese cities like Beijing and Shanghai), while Delhi's was 4.23 per cent for the same period (UN-Habitat 2008). This exponential growth has had a severe impact on the city's social and physical infrastructure besides leading to an acute shortage of housing (Singh 1991; Ali 2003).

## Low supply

*Land-tenure security* – There are two reasons for the low supply of land in Delhi: the public monopoly on land coupled with mismanagement (Pugh 1991; Sivam 2003), plus issues associated with tenure security (Kundu 2004). In the absence of tenure security, people are afraid to invest in their housing and allied services, which means

poor environments continue to exist. The lack of tenure security results in exclusion and the denial of credit and services to disadvantaged groups as well as in psychological problems among dwellers. Appropriate land-tenure mechanisms are cited as being a prerequisite for efficiency and equity in the land market, otherwise they will result in corruption and a loss in public revenue (Sivam and Karuppanan 2002). The settlements in Delhi are listed here in order of their degrees of security, starting with the highest and ending in the lowest: planned settlements, resettlement sites, designated slum areas, urban villages, rural villages, regularized unauthorized colonies, unauthorized colonies and JJ clusters (Kundu 2004).

*Political, managerial and institutional failure* – The proliferation of uncontrolled urban settlements has also been caused by inadequate political, managerial and institutional leadership (collectively) and even by exploitation by the custodian of the institutions concerned. A number of studies have pointed out how chaos has occurred in uncontrolled settlements for reasons of political gain, either due to vote bank politics or on other grounds such as a case of resettlement during the emergency period from 1975 to 1977 (see the essay by Dupont, Tarlo et al. 2000 for details). A study by Cedric Pugh also demonstrates how managerial and institutional failure on the part of the apex agency, the DDA, led to the proliferation of uncontrolled urban settlements (Pugh 1991).

*Implementations deficit* – Since India's independence in 1947, its governments have anticipated for inclusive planning. For instance, MPD 2021 has clearly led policies and projects for low-income settlements. A policy document entitled "National Urban Housing and Habitat Policy 2007" has also instrumented policy for inclusive growth by allocating urban resources – mainly land and housing infrastructure – to economically and socially marginalized sections of societies. But paradoxically, these noble policies could not materialize fully at ground level, hence they failed to address issues in spite of the good intentions underlying them. We have termed this an "implementation deficit". The implementation deficit should be minimized for inclusive and sustainable development. In contrary to this, high implementation deficit means programs and policies are not transferred on ground, hence low probability for intended output.

## **Low income**

The low income of households cause urban deprivation and diminish human capability. Hence, it accelerates growth of uncontrolled urban settlements. A study conducted by the National Council of Applied Economic Research (NCAER) shows that Delhi's share of the urban population was 4.9 per cent in 2004/05, while its share of income was 10.6 per cent in relation to urban India, i.e., the share of income was 2.2 times higher than its population share (Dobhal and Pande 2008). Another study shows Delhi has become richer: its per capita income increased from Rs. 44,200 in 2001/02 to Rs. 51,604 in 2003/04, and the average value of a household's



assets also grew from Rs. 92,000 in 1981 to 7.47 lakh<sup>3</sup> in 2002 (Kumar 2008). This data reveals that Delhi's citizens have a higher economic status overall in relation to other parts of the country. However, the darker side to this story is that inequality has been increasing among urban Indians. This can be demonstrated by increasing the Gini coefficient, which is the measure of inequality used most frequently. This varies between 0 and 1, where 0 represents complete equality and 1 stands for complete inequality (i.e., one person has all the income, while none of the others have any). The Gini coefficient for urban India increased from 0.39 in 1995/96 to 0.43 in 2004/05, which is a rise of roughly 15 per cent in a decade (Dobhal and Pande 2008). The proportion of Delhi's population living below poverty line has increased by 87 per cent from 1.55 million in 1999/2000 to 2.29 million in 2004/2005. The proportion of Delhi's population living below poverty line in 2004/05 was 14.7 per cent of total population in Delhi, 6.9 per cent of rural and 15.2 per cent of urban population. This means, population below poverty line grew by 87 per cent, in just five years (Government of the National Capital Territory of Delhi 2009).

Delhi therefore has two faces: one accommodates the richer section of society and the other accommodates a significant number of poor people (a number that is still on the rise). Low incomes and the ever-widening gap between the rich and poor directly and indirectly contribute to the proliferation of uncontrolled urban settlements in Delhi. The rapid growth of such urban settlements has a host of negative consequences, including various types of deprivations – economic, social and political – all of which are interlinked.

### **A comparative study of three selected settlements**

Three settlement areas were chosen for a comparison, namely Abul Fazal Enclave, Okhla and B. G. Khanpur. These are all examples of different kinds of settlements: an unauthorized colony, an urban village and a notified slum area (referred to hereafter as a "slum") respectively. These settlements are located in the southern periphery of Delhi, as shown in Figure 4. They represent a subgroup of all seven types of uncontrolled urban settlements (see Figure 2). The unauthorized colony is characterized by a low degree of planning intervention, a low degree of legality and an early stage of urban evolution, while the main features of the urban village are a moderate level of planning intervention, a certain degree of legality and a historical evolution. The slum represents a third category. About 300 households were selected randomly in these settlements and a survey was conducted with the head of each household. In the absence of this person, the most senior members of the household were questioned. This took place in January/February 2009 in order to establish the socio-economic profile of the inhabitants and the characteristics of their dwellings.

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<sup>3</sup> 1 lakh = 100,000

## **Evolution, general characteristics and urban amenities**

The unauthorized colony situated in the southern periphery arose because of illegal land development on agricultural land in the early 1980s. Interviews with the residents, some of whom had lived there from the very beginning, revealed that the processes of land assembly, subdivision and disposal were well organized and even included flexible financial options based on mutual trust among the stakeholders. Today, there is no fear of demolition any more; indeed, the colony is already in the process of being regularized by the central government. The traits of dwelling units are not uniform, but vary within the settlements and can easily be identified by visual observation.

This settlement has an electricity supply, but does not have an adequate physical infrastructure such as a municipal water supply or sanitation services. The social infrastructure provided, like schools and health services, are also inadequate. Mostly these needs are catered to informally by the private sector.

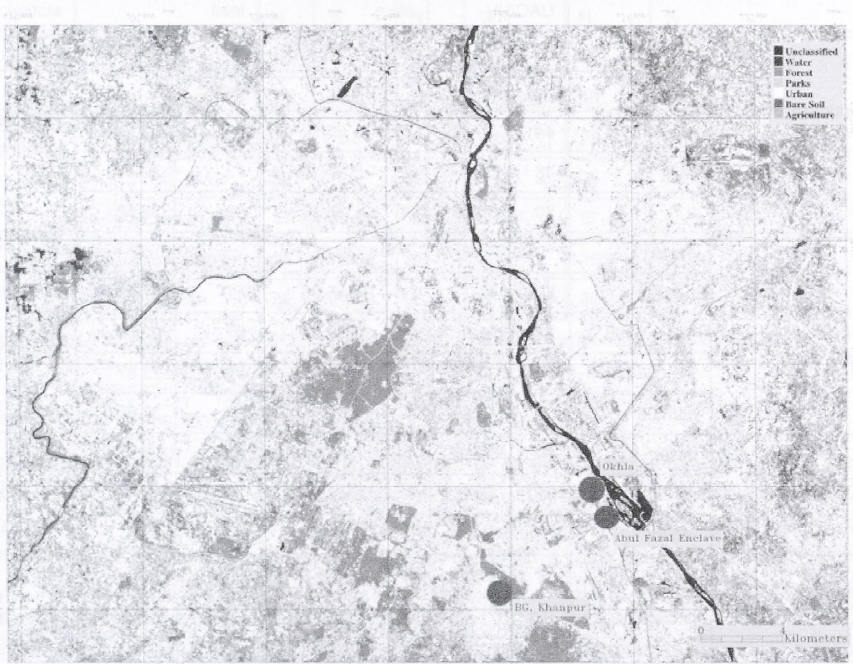
Okhla, the urban village that was studied, is an old settlement in South Delhi. It was previously a rural village, but was later encompassed by urbanization and emerged as an urban village in the 1980s. This settlement is compact, has a greater right to tenure compared with the unauthorized colony. Most of the dwellings are three to four storeys high with 100 per cent built-up area on their plot. Although this settlement is legally able to have urban services due to its tenure status, it severely lacks a municipal water supply and sewerage system.

The third kind of settlement, we looked at, was a “notified slum area” located in Khanpur. The basic difference between a notified slum area and a JJ cluster lies in their tenure rights: since the government has given the slum a formal right to tenure, or “notified” it, the settlement has more tenure security and some urban amenities. But, JJ clusters households fear eviction and have extremely poor amenities. The slum that was studied is relatively old, with most of the dwelling units being erected about 20 years ago.

## **Socio-economic characteristics of households**

Table 2 presents a summary of the socio-economic characteristics of uncontrolled urban settlements. A preliminary tabulation showed that there was little difference between an unauthorized colony and an urban village, so we merged these settlements into one group. We shall make a comparison between an unauthorized colony/urban village (known hereafter as a “non-slum”) and slum households.

The average household size in the settlements was six. A non-slum household has a smaller size than a slum household. The gross monthly income per household varies significantly between both groups. On average, the household income in

**Figure 4** Location of case-study areas on the land-cover map of Delhi, 2003

uncontrolled settlements was Rs. 12,240, which is considerably below the average household income in Delhi. The monthly average income in a slum household was only Rs. 4,330, while non-slum households reported about four times as much income – Rs. 16,864. In the slum, about 65 per cent of the households had an average income of less than Rs. 4,500, while in the non-slum households, 44 per cent of the families had an average income of over Rs. 16,000. This figure shows that the gross monthly income in slum households is not enough to meet their basic needs, a fact that can be seen from the state of their dwellings and neighbourhoods.

Our data shows that the rate of ownership in non-slum households is higher than in slum households. However, a significant percentage of slum households (47 per cent) live in rented housing, which means due consideration should be taken with respect to planning intervention to safeguard the tenants' interests (and those of their landlords).

The monthly average expenditure on housing in slum households measured by rent per dwelling was about Rs. 348, while that for non-slum households was Rs. 1,844. Indirectly, this also shows the extent of poor-quality housing in slum settlements. In India, the concept of the joint family is a common one in rural areas. In the settlements we studied, approx. 26 per cent of the households lived as joint families.

**Table 2** Socio-economic characteristics of households by settlement types

		UAC/UV		slum		total		statistic
		N	%	N	%	N	%	
number of household member	mean	5.99		6.22		6.08		-0.64
	≤ 4	44	30.99	28	33.73	72	32	0.35
	5-6	48	33.8	25	30.12	73	32.44	
	≥ 7	50	35.21	30	36.14	80	35.56	
household income (in rupees)	mean	16864.08		4329.51		12240.22		10.21***
	≤ 4500	7	4.93	54	65.06	61	27.11	135.55***
	4501-8999	24	16.9	27	32.53	51	22.67	
	9000-15999	49	34.51	2	2.41	51	22.67	
	≥ 16000	62	43.66	0	0	62	27.56	
tenure	owner	79	55.63	44	53.01	123	54.67	1.42*
	rental	61	42.96	39	46.99	100	44.44	
	others	2	1.41	0	0	2	0.89	
rent /dwelling (in rupees)	mean	1844.6		348.73		1302.52		5.87***
family type	nuclear	110	77.46	56	67.47	166	73.78	2.70***
	joint	32	22.54	27	32.53	59	26.22	
religion	Hindu	5	3.52	73	87.95	78	34.67	164.86***
	Muslim	137	96.48	10	12.05	147	65.33	
	others	0	0	0	0			
caste <sup>4</sup>	not reported	72	50.7	0	0	72	32.73	125.73***
	upper	65	45.77	23	29.49	88	40	
	middle	4	2.82	43	55.13	47	21.36	
	lower	1	0.7	12	15.38	13	5.91	
migration status	native	20	14.08	19	22.89	39	17.33	21.56***
	migrant	122	85.92	64	77.11	186	82.67	

<sup>4</sup> Same as foot note 6.

		UAC/UV		slum		total		Statistic
		N	%	N	%	N	%	
period of migration	≤ 1 year	16	11.35	6	7.23	22	9.82	26.19***
	1~5 years	24	17.02	19	22.89	43	19.2	
	6~10 years	22	15.6	4	4.82	26	11.61	
	11~15 years	32	22.7	4	4.82	36	16.07	
	≥15 years	47	33.33	50	60.24	97	43.3	
purpose of migration	employment	95	72.52	64	100	159	81.54	21.56***
	education	36	27.48	0	0	36	18.46	

Note: UAC: unauthorized colony, UV: urban village; the statistics mentioned are the T-value for the averages and the chi square value for the frequencies.

\*\*\*: p-value<.01, \*\*: p-value<.05, \*: p-value<.1

Source: field survey, January-February 2009.

The religious background of our respondents shows that the settlements are exclusively dominated by a particular religion; take, for instance, the non-slum area, which is mostly dominated by Muslims, and the slum we observed, which is dominated by Hindus. The limited data available for the caste indicates that the slum is a “hotspot” for the lower and middle classes.<sup>5</sup> So positive intervention in slums (especially those we visited) would help to bridge the social gap that exists. Migration data shows that 82 per cent of the households consist of migrants, which is significantly high. For the purposes of our study, a migrant is someone who lives in a place other than his/her place of birth. Our data shows that more than 80 per cent are migrant households in the settlements. Perhaps this pattern might indicate that migrants (especially unskilled people) opt for uncontrolled settlements as viable places in which to live and then hunt for a job since over 70 per cent migrated for employment purposes and the rest for educational reasons.

## Dwelling-unit characteristics

Table 3 is a summary of dwelling characteristics. In non-slum households, about 65 per cent of the dwellings have a permanent structure, while in slum households, most of the dwellings only have a semi-permanent structure. Judging by the age of the dwellings, we observed that over 55 per cent of those in the slum were over 20 years old, but new dwellings are still being added in the non-slum areas.

The average number of rooms per household is 2.53 and 1.51 in non-slum and slum settlements respectively. The ratio of members per room in slum households is

<sup>5</sup> Scheduled castes (SC) and scheduled tribes (ST) jointly form the lower class, the “other backward class” (OBC) makes up the middle class and the remaining people constitute the “upper” class, relatively speaking.

extremely high at 4.49, while this value is only 2.59 in non-slum households. This clearly provides an indicator for severe environmental problems as well as social disorder. In addition to this, slum households rarely have a kitchen or toilet, so they have to depend upon community services for these facilities.

**Table 3 Dwelling-unit characteristics by settlement types**

		UAC/UV		slum		total		statistic
		N	%	N	%	N	%	
structural condition <sup>6</sup>	permanent	93	65.49	0	0	93	41.52	93.53***
	semi-permanent	48	33.8	82	100	130	58.04	
	temporary	1	0.7	0	0	1	0.45	
no. of rooms	mean	2.53		1.51		2.16		8.19***
	1	10	7.04	49	59.04	59	26.22	77.77***
	2	73	51.41	25	30.12	98	43.56	
	3	40	28.17	9	10.84	49	21.78	
	≥ 4	19	13.38	0	0	19	8.44	
persons per room	mean	2.59		4.49		3.29		-8.48***
kitchen	no separate k.	6	4.35	72	86.75	78	35.29	154.08***
	separate k.	132	95.65	11	13.25	143	64.71	
toilet	not available	1	0.71	70	84.34	71	31.7	168.77***
	available	140	99.29	13	15.66	153	68.3	
Age of dwelling unit (in years)	≤5	2	1.41	0	0	2	0.89	2.38**
	5~9	27	19.01	14	16.87	41	18.22	
	10~19	46	32.39	23	27.71	69	30.67	
	≥20	67	47.18	46	55.42	113	50.22	

Note: UAC: unauthorized colony, UV: urban village; the statistics mentioned are the T-value for the averages and the chi square value for the frequencies.

\*\*\*: p-value<.01, \*\*: p-value<.05, \*: p-value<.1

Source: field survey, January-February 2009.

In brief, our findings show that the dwelling characteristics in non-slum settlements (i.e., the unauthorized colony and urban village) are at an acceptable level in terms

<sup>6</sup> Permanent dwelling unit: a permanent dwelling is one that has walls and a roof made of permanent materials like burnt bricks, stones (packed with lime or cement), cement concrete or RCC. In a temporary dwelling, on the other hand, the walls and/or roof are made of temporary materials such as unburnt bricks, bamboo, mud, grass, reeds, thatch or loosely packed stones. A semi-permanent dwelling is one that has fixed walls made of permanent material, but its roof is made of materials other than those used for permanent houses.

of quantity (number of members per room) and quality, but slum households are in an alarming condition in both respects.

## Conclusion

Delhi has experienced rapid urbanization both in terms of its population, where immigrants have contributed slightly more than the natural growth, and in terms of its spatial expansion as a result of major historical events. The existing system has failed to bridge the gap between the demand for and supply of housing and allied services; hence, there has been an uncontrolled proliferation of settlements, which now account for more than half of the city's population.

The data we analysed reveals that there is ample variation in socio-economic and dwelling-unit characteristics among uncontrolled urban settlements; slum households, however, are in a pathetically bad condition. In the cases studied, both the physical and social infrastructures in place are exceptionally poor. The characteristics of dwelling units in the unauthorized and urban villages are at an acceptable level, but they are terrible in the slums. Hence, these settlements need a different kind of planning intervention.

The urban infrastructures are the key elements here, but there is a lack of these across the settlements. The residents' income levels indicate that an urban infrastructure can be partially afforded by households in the unauthorized colony and urban village, but in the slum such provision must be made by public agencies due to the inhabitants' low level of income. The provision of infrastructures in slum settlements will enhance the social integration of socially and economically disadvantaged group like low-class and low-income households.

Besides the provision of urban infrastructures, slum households need to be given an "economic input package", otherwise they will not be able to integrate without any improvement in household income.

It is undeniable that uncontrolled urban settlements are the main form of urbanization in Delhi and other low-income countries, which are complex in nature. It is necessary to opt for an innovative approach to integrate these settlements rather than thinking within the limits of tenure legality. Amitabh Kundu (Kundu 2004) has rightly argued that if provision of tenure security is against the Delhi master plan, then any other government approach to planning would also be against law of land such as not allocating land and housing to the urban poor in spite of provisions for this existing in Delhi's master plans.

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