

# Ahmedabad

## More but Different Government for “Slum Free” and Livable Cities

*Patricia Clarke Annez*

*Alain Bertaud*

*Marie-Agnes Bertaud*

*Bijal Bhatt*

*Chirayu Bhatt*

*Bimal Patel*

*Vidyadhar Phatak*

The World Bank  
Sustainable Development Network  
Finance Economics and Urban Department  
November 2012



## Abstract

This paper analyzes real estate market dynamics over the past decade in the city of Ahmedabad, India, with a view to improving the living conditions of the large population living in slums. The paper combines census data, the National Sample Survey, and slum household surveys to review the demand side of the market. Satellite photography was used to estimate the production of both formal and informal housing over the past ten years. Analysis of the execution of the development plan for the Ahmedabad region and town planning schemes shows how the system of housing supply has evolved. These analyses are used to assess the feasibility of various approaches to achieving “slum free” cities, the goal of the Government of India’s planned assistance program Rajiv Awas Yojana. The paper concludes that notwithstanding a substantial increase in public housing

production in recent years, providing subsidized formal homes from government or through reservations for lower income groups in private developments would take more than a generation just to handle the current slum population—representing one-third of households. Providing basic environmental infrastructure services in existing underserved neighborhoods—a proven approach under the Slum Networking Program—and bolstering infrastructure networks for the city to accommodate increased demand are affordable and feasible. Addressing issues such as rural-urban land conversion and ambiguous land tenure, and allowing flexibility for realistic building standards and increasing maximum floor space standards in certain neighborhoods can help to ensure a growing supply of housing that is affordable for moderate and low-income households.

---

This paper is a product of the Finance Economics and Urban Department, Sustainable Development Network. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The author may be contacted at [pannez@worldbank.org](mailto:pannez@worldbank.org) or [pcannez.clarke.work@gmail.com](mailto:pcannez.clarke.work@gmail.com).

*The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.*

# **Ahmedabad: More but Different Government for “Slum Free” and Livable Cities**

Patricia Clarke Annez, Alain Bertaud, Marie-Agnes Bertaud,  
Bijal Bhatt, Chirayu Bhatt, Bimal Patel, Vidyadhar Phatak<sup>1</sup>

Keywords: Basic services, Slums, Urban Infrastructure, Housing and Land Policy in India

JEL Classification: R21 Housing Demand, R31 Housing Supply and Markets, R52 Land Use Regulations, R52 Land Use Regulations, R53 Public Investment and Capital Stock

Sector Board: Urban

---

<sup>1</sup> Annez, Bertaud , Bertaud and Phatak (consultants to the World Bank), Bijal Bhatt (Self-Employed Women’s Association Mahila Housing Trust), Chirayu Bhatt and Bimal Patel (Environmental Planning Collaborative Ahmedabad) . Ms. Purti Sharma of the India Development Foundation provided generous assistance and invaluable insights in preparing computations using the NSS data. Ms. Mridusmita Bordoloi downloaded and analyzed the NSS Household Expenditure Data. Ms. Vasudha Thawakar of the World Bank organized and facilitated the consultations in Ahmedabad and provided invaluable advice as the reports were written and reviewed. The authors are grateful to the many persons who gave us comments and very helpful insights for this work, including Ms. Ela Bhatt, Mr. Sundar Burra, Mr. I.P. Gautam, Mr. Shubhagato DasGupta, Ms. Renana Jhabvala, Mr. Rajendra Joshi, Ms. Darshini Mahadevia, Mr. Arun Maira, Mr. Augustin Maria, Mr. Dinesh Mehta, Ms. Meera Mehta, Mr. G. Mohapatra, Ms. Reema Nanavaty, Mr. Prem Pangotra, Ms. Sheela Patel, Ms. Giovanna Prennushi, Mr. Harris Selod, Mr. Mike Slingsby, Mr Howard Spodek, Mr. S. Sundar, Ms. Tara Vishwanath., and Ms. Berenice Van Bronkhorst. In addition, officials of the Planning Commission and the Ministry of Housing and Urban Poverty Alleviation have been most generous of their time in providing feedback as this work progressed. All errors and omissions remain those of the authors. Views expressed are personal.



## **Ahmedabad: More but Different Government for “Slum Free” and Livable Cities**

Authors: Patricia Clarke Annez, Alain Bertaud, Marie-Agnes Bertaud, Bijal Bhatt,  
Chirayu Bhatt, Bimal Patel, Vidyadhar Phatak

### Table of Contents

<b>I.</b>	<b>Methodology and Context .....</b>	<b>6</b>
<b>II.</b>	<b>Introduction and Background on Factors Driving Demand for Housing in Ahmedabad .....</b>	<b>6</b>
<b>III.</b>	<b>Evolution of the Population, Built-up Areas and Supply of Housing in Ahmedabad 2001-2011 .....</b>	<b>14</b>
<b>IV.</b>	<b>Land Management and Real Estate Policy.....</b>	<b>20</b>
<b>IV A.</b>	<b>Salient developments in planning and real estate policy and programs in Ahmedabad ....</b>	<b>20</b>
<b>IV B.</b>	<b>Constraints on the Supply of Housing in the AMC today .....</b>	<b>29</b>
<b>V.</b>	<b>Immediate Improvements: .....</b>	<b>47</b>
<b>VI.</b>	<b>SUMMARY AND CONCLUSIONS .....</b>	<b>60</b>

### ANNEXES

1. Computation of Distribution of Household Income in AMC
2. Ahmedabad: Residential Prices
3. Ahmedabad: Cost of Slum and Chawl Upgrading
4. Evolution of City Spatial Structure between 2001 and 2011
5. Summary of Lessons from the City-Wide Assessment in Ahmedabad

### List of Figures:

Figure II.1: Distribution of Household Income 2001 and 2011 by Income Category  
 Figure II.2: Household Income Distribution for 2011 and Housing Typologies  
 Figure II.3: Households’ income distribution and affordable housing prices

Figure III.1: Evolution of population and built-up areas in the AMC between 2001 and 2011  
 Figure III.2: Estimate dwelling units produced between 2001 and 2011  
 Figure III.3: Built-up area and areas occupied by slums in 2001  
 Figure III.4: Built-up area and areas occupied by slums in 2011  
 Figure III.5: Location of newly developed areas between 2001 and 2011  
 Figure III.6: Evolution of Real Estate Prices in AMC Zones

Figure IV.1: Development Plan of Ahmedabad, 1965  
Figure IV. 2: Neighborhood Improvements under SNP  
Figure IV.3: Process for Conversion of Rural Land already Zoned for Urban Development  
Figure IV.4: Progress of Town Planning Schemes Started under the new DP Since 2003  
Figure IV.5: Process for Brownfield Urban Redevelopment  
Figure IV.6: Built Up Density Profile in AMC 1991-2001  
Figure IV.7: Ahmedabad Built Up Densities in 2001  
Figure IV.8a: Existing Formal Housing that would be Illegal for New Construction under the GCDR  
Figure IV.8b: Existing Formal Housing that would be Illegal for New Construction under the GCDR  
Figure IV.8c: Existing Formal Housing that would be Illegal for New Construction under the GCDR  
Figure IV. 9a: Possible Plot Layout according to GCDR  
Figure IV.9b: Plot Layout with modifications to GCDR

Figure V.1: Before and After Slum Networking in Ahmedabad  
Figure V.2: Typical Lower Middle Class Housing in Ahmedabad  
Figure V.3: Distribution by Dwelling Size in Sample Slum Pockets

List of Tables:

Table II.1: Population and Urbanization Growth in Ahmedabad 1971-2011  
Table II.2: Growth Rates of Employment and Population 1991-2001

Table IV.1: Town Planning Schemes in Ahmedabad  
Table IV.2: Key Infrastructure built by AUDA between 1999 and 2010  
Table IV.3: Land Appropriated in all TP Schemes in Ahmedabad, 2010  
Table IV.4: Key Indicators for Vernacular and GDCR housing  
Table IV.5: Comparison of Key Specifications for GDCR and Modified GCDR Specification for More Affordable Housing  
Table IV.6: Cost Comparison with marginal flexibility in the GCDR

Table V.1: Summary of Total Costs of Upgradation in Ahmedabad  
Table V.2: Per Household Upgrading Costs  
Table V.3: AMC Budget 2008-09 through 2011-2012  
Table V.4: Estimates of Populations Unsuitable for In-Situ Upgradation

## List of Acronyms and Definitions

AMC-Ahmedabad Municipal Corporation

AUDA\_Ahmedabad Urban Development Authority

BRTS-Bus Rapid Transit System

CBD-Central Business District

CBO\_Community Based Organization

CEPT-Centre for Environmental and Planning Technology in Ahmedabad

CSO-Civil Society Organization

Chawls or Challis—this refers to very low substandard housing historically provided by mill owners for mill workers. These are located on private lands. Although typically located on private lands, given the substandard infrastructure services provided in these neighborhoods, they strongly resemble slums and often need improvements in network and neighborhood infrastructure.

Crores-Unit of counting used commonly in South Asia, refers to ten million

DP-Development Plan

EPC-Environmental Planning Collaborative

FSI-Floor Space Index –refers to the ratio of built area on a given parcel in relation to the overall area of the parcel. Maximum FSI limits how much floor area may be built on a given plot.

Gamtals—Village areas that have been surrounded by the city over time. Oftentimes due to late incorporation in the city, they are not serviced with urban infrastructure. Housing also does not necessarily adhere to municipal by-law standards

GDCR-General Development Control Regulations. These are building by laws that stipulate a number of physical features that are to be allowed in formally approved construction projects. These regulations run to many pages and cover many features such as the amount of a plot that may be covered by construction, distance from neighboring plots, widths of hallways, etc.

HUPA-Ministry of Housing and Urban Poverty Alleviation in Government of India

JnNURM Jawaharlal Nehru Urban Reform Mission an urban Program sponsored by the Government of India

Lakhs or lacs –unit of counting used commonly in South Asia, refers to one hundred thousand

NOC- No Objection Certificate

RAY- Rajiv Awas Yojana - an urban shelter Program sponsored by the Government of India

SEWA Self Employed Women's Association

SPV-Special Purpose Vehicle

TPS- Town Planning Schemes are a form of land pooling for infrastructure provision supported under the Town Planning Act in the state of Gujarat. Land Pooling requires participating land holders to give up a portion of their land to provide land for urban services.

UA-Urban Agglomeration

## Ahmedabad

### More but Different Government for “Slum<sup>2</sup> Free” and Livable Cities

#### I. Methodology and Context

The purpose of this work is (i) to gather basic information necessary to prepare a broad assessment of feasibility for immediate actions to improve key public services and environmental conditions for all households in low-cost informal housing; and (ii) to prepare an assessment of impediments to supply of housing across the income spectrum and recommendations for actions that will make that supply more responsive to increased demands as population and incomes grow. Such measures would reduce pressure on prices and make decent and dignified housing more widely affordable.

The objective is to mobilize support at the city, state and federal levels of government and within the local community for a program of short and medium term actions and investments based on a commonly shared and credible set of data. As such, the study focuses on working with reliable, available data to the extent possible rather than seeking to prepare a definitive research analysis that would take years to develop. The focus of the study is its city-wide perspective—taking a comprehensive look at the entire market and infrastructure network and examining what it would take to provide minimum shelter standards for all. It does not pretend at this stage to present the most precise and detailed information on each topic—which must be left to the responsible agencies. We sought a level of accuracy that permits us to make a quick assessment of what a comprehensive program would entail. Should there be agreement on moving forward with the approach, full feasibility and design studies would be required.

We have chosen to illustrate the city level approach in Ahmedabad, because many parts of the envisaged program of investment and reform have already been successfully piloted here. For the purpose of data gathering and analysis, we have taken the Ahmedabad Municipal Corporation (AMC) as extended in 2006 to represent the city of Ahmedabad. This area captures virtually all of the built up area in the agglomeration.

Consultations as the work progresses have been an integral part of the study. Likewise, the study includes documentation of the methodology used in preparing the assessment to illustrate how other cities wishing to take a similar approach might proceed.(Annex 5).

#### II. Introduction and Background on Factors Driving Demand for Housing in Ahmedabad

Ahmedabad is a fast growing city in one of India’s most dynamic and rapidly urbanizing states. Table II.1 shows that Gujarat, at 42.6 percent is well over the all-India urbanization average of 31.2 percent as measured in the 2011 Census. Likewise the speed at which urbanization in Gujarat is taking place is considerably more rapid than in all of India, which changed less than 2 percentage points over ten years. The average annual growth rate of urban population in Gujarat

---

<sup>2</sup> Throughout this study, when we refer to slums, we are referring to any underserved substandard informal housing area. This may include chawls/challis that have conditions similar to slums, even through ownership arrangements and administrative treatment of slums and challis may differ. Our emphasis is on providing basic neighborhood improvements to areas that do not have them. As such, an underserved chawl is not that different from a slum. There is of course considerably variability among different slums and challi areas, which must be taken into account when detailed investment plans are drawn up.



for the next 15 years has been forecast at 2.9 percent<sup>3</sup>, indicating continued high urban population growth in the state for an extended period. As is commonly the case, Ahmedabad, the largest city in the state, has been growing more slowly than the total urban population of the state. It is also important to note that while population growth rates in both the AMC and the urban areas of Gujarat rose in the recent census, they are considerably lower than in the 1970s. These healthy growth rates and the relatively youthful age profile of the population clearly imply that household formation in the AMC—not currently measured at the corporation or urban agglomeration area—are likely to be buoyant and will require a substantial supply response to avoid major real estate price increases. However, rising prices and continuing large shares of the population in slums are not the result of out of control urbanization. Rates of growth are actually declining.

Table II. 1 Population and Urbanization Growth in Ahmedabad 1971-2011

	1971	1981	1991	2001	2011
<b>Population in '000</b>					
Gujarat State	26,697	34,086	41,310	50,671	60,384
Gujarat - Urban	7,497	10,601	14,248	18,930	25,713
Ahmedabad MC (AMCext from 2001)	1,731	2,396	2,924	4,520	5,571
<b>Average Annual Pop'n Growth Rates</b>					
Gujarat State		2.47%	1.94%	2.06%	1.77%
Gujarat - Urban		3.53%	3.00%	2.88%	3.11%
Ahmedabad MC		3.30%	2.01%	NA	2.11%
<b>Ratios</b>					
Gujarat State Urban/Total	28.1%	31.1%	34.5%	37.4%	42.6%
Ahmedabad AMC/Gujarat Urban	23.1%	22.6%	20.5%	23.9%	21.7%

Source: Census of India, various years

Note: Growth of AMC population between 1991 and 2001 is not shown due to expansion of AMC area in 2001. Since population is measured on two different areas in the different years, the growth number reflects the jurisdictional shift not population growth.

Incomes are, however, growing rapidly. Per capita net state domestic product has grown at over 8.4 percent per annum in real terms between 2001 and 2010<sup>4</sup>, placing Gujarat amongst the most rapidly growing states in the country. Employment as reported in the Census of 2001 grew by 4 percent a year between 1991 and 2001 in the urban agglomeration of Ahmedabad, as against a population growth of 3 percent<sup>5</sup>. This is typical of the pattern for the state as a whole, with employment in urban areas outpacing both population growth in the cities and the rate of employment growth in the state as a whole. Table II.2 illustrates. Median household expenditure in Ahmedabad as measured by the National Sample Survey, has grown at over 5 percent a year in real terms in the 5 years between 2004/2005 and 2009/2010<sup>6</sup>. Thus, the problems of affordable housing in the AMC are resulting not from a distressed economy and growing poverty. The issue in this city lies elsewhere.

<sup>3</sup> Report Of The Technical Group On Population Projections Constituted By The national Commission On Population May 2006. Office Of The Registrar General & Census Commissioner, India 2a, Mansingh Road, New Delhi

<sup>4</sup> RBI website Handbook of Statistics of the Indian Economy. consulted 08/11/11  
[http://rbidocs.rbi.org.in/rdocs/Publications/PDFs/009T\\_HBS120911.pdf](http://rbidocs.rbi.org.in/rdocs/Publications/PDFs/009T_HBS120911.pdf)

<sup>5</sup> Data from Census 2001 and 1991 Marginal Workers and Main Workers Categories. Such employment data is not available for the AMC itself and only for the Urban Agglomeration (UA).

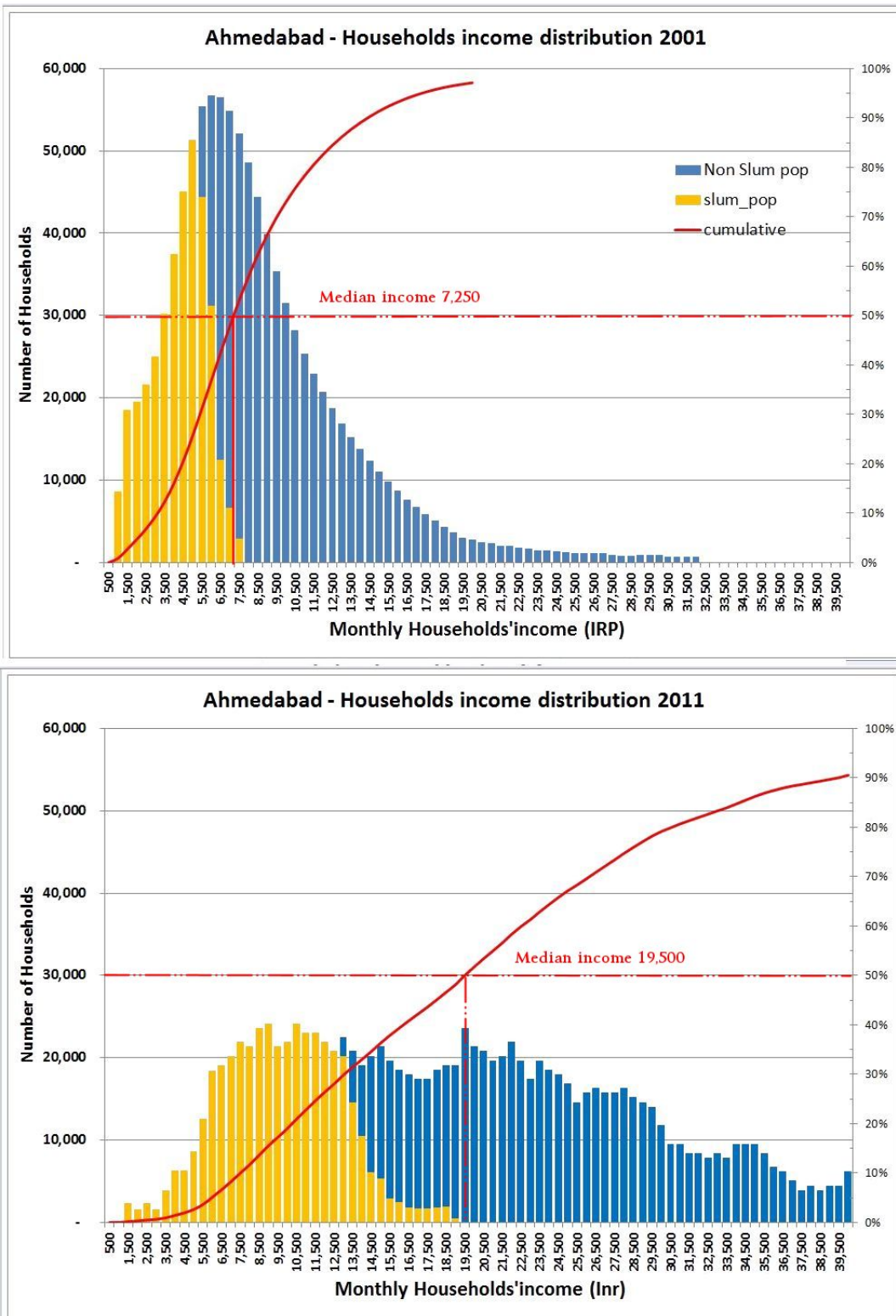
<sup>6</sup> Nominal data is converted using the GDP deflator for Gujarat published by the Reserve Bank of India. As is commonly the case with rapid income growth, the mean expenditure is growing more rapidly than the median. The ratio between mean and median in the 2009/10 survey has risen only slightly to 1.22 from 1.20 in the 2004/05 data.

Table II. 2 Growth Rates of Employment and Population 1991-2001

Average Annual Growth 1991-2001		
	Employment	Population
Gujarat	2.5%	2.1%
Gujarat Urban	3.8%	2.9%
Ahmedabad UA	4.0%	3.0%

In order to understand the demand for housing in Ahmedabad in relation to the supply of formal housing, it is essential to examine the distribution of household income, not just examine averages.

The income distribution of households within the AMC current boundaries is shown for 2001 and 2011 on the two graphs of *Figure II.1*. The population living in slums/challis is shown as yellow bars while the population living outside slums is shown as blue bars. Predictably, the slum population is mostly clustered at the left part of the graph for the 2 years measured. However, we can see an overlap between the income of the more affluent households living in slums and the income of the less affluent living in formal housing. The total number of households living in slums/challis in both years is derived from the slum mapping described in section III. Based on data for the distribution of household income, we were then able to determine how high up the income distribution are the households obliged to live in slums. We then cross check this information with a sample of housing prices using standard affordability measures of multiples of income.



**Figure II.1 Distribution of Household Income 2001 and 2011 by Income Category<sup>7</sup>**  
 Source: Author's Calculations See Annex 1 for more details.

<sup>7</sup>. As can be seen from the cumulative distribution curve, median income has nonetheless increased considerably. This graph should not be interpreted as a measure of inequality because the categories on the x-axis are not percentages of income. These figures are distribution of income are shown in nominal terms because we are interested in understanding how well the current population can afford housing in current—not real—prices.

**Figure II.1 illustrates the very striking upward trend in household incomes over the ten year period under study. The median income has increased to 2.7 times what it was in 2001.** While we have no comparable data for housing prices over the period, it is nonetheless striking that formal housing is still not affordable for a large part of the population. The population living in challis and slums alone represents more than two million people, and they cannot be placed in new housing overnight. As such, there is a dramatic and immediate need for better services for this very substantial share of the population. A strategy for meeting this need will be discussed in detail in Sections IV and V below.

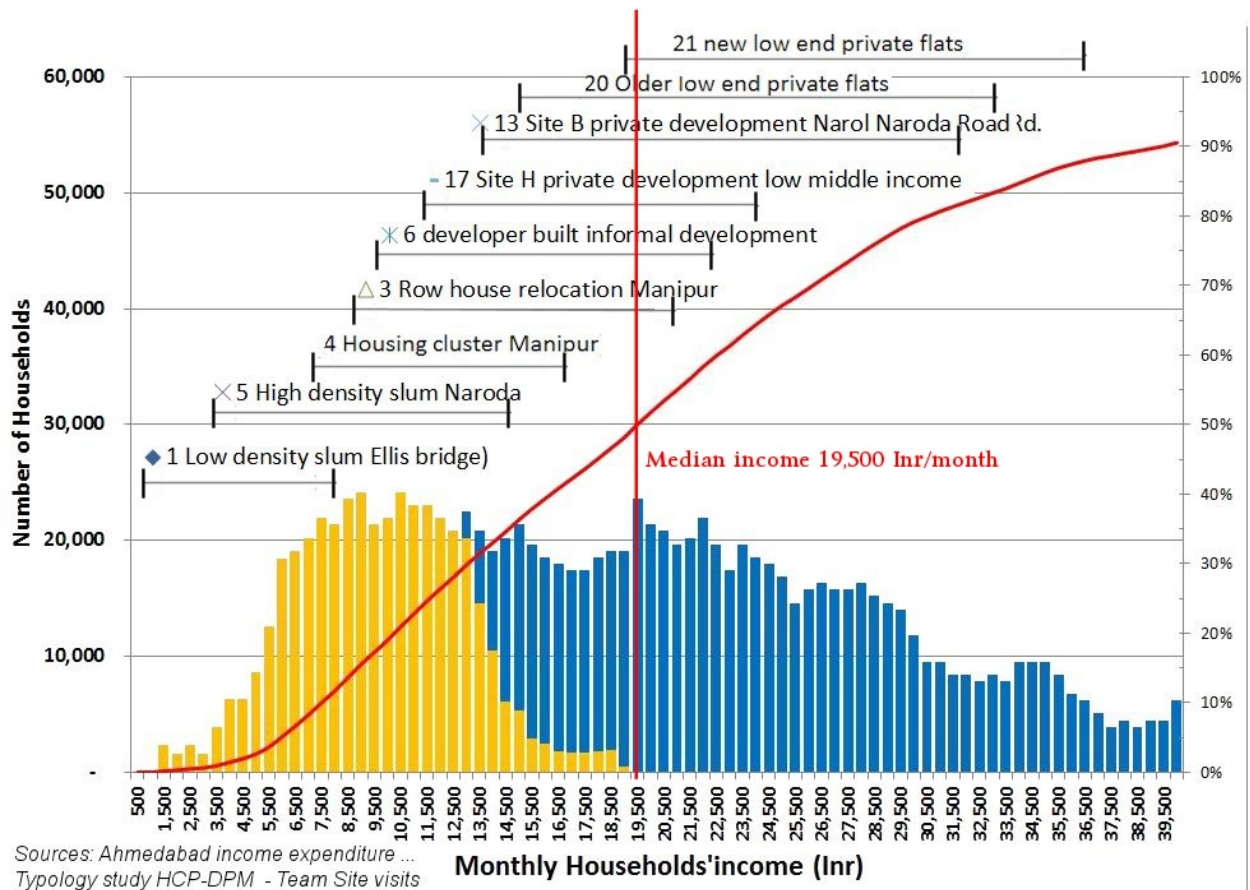
If the supply of housing were perfectly elastic any increase in income for the higher income slum dwellers would allow them to move into formal housing. If the supply of housing were completely inelastic then higher incomes would result in higher prices and a general increase in income would result in households living in the same type of housing in spite of their increased income.

**Figure II.1** shows that a similar proportion of households who were living in slums/challis in 2001 are also living in slums/challis in 2011 in spite of a large increase in nominal income<sup>8</sup>. However, if we take into account the demographic conditions in slums (higher natural growth rate, higher rate of in-migration) it is clear that quite a number of slum/challi dwellers must have “escaped” from their slum into higher standard housing. If it was not the case the proportion of slum dweller in the total population would have increased (as it appears to be the case in Mumbai). For the slum households whose increased income allowed them to move out of a slum, it is likely that they have moved to the older part of the housing stock, many in the old city, which is cheaper and often more centrally located than the newer apartments in the more distant suburban areas.

---

<sup>8</sup> It should be noted, as discussed later in the text, that the share of the population living in slums/challis was calculated independently using our mapping of slum areas combined with data on density per hectares from detailed surveys of representative slums and on average household size. Those computations provide us with the number of households living in slums/challis. The results are shown in Figure III. 2

## Ahmedabad- Income distribution and housing typology



**Figure II.2 Household Income Distribution for 2011 and Housing Typologies**

Source: Authors' Calculations

Figure II.2 roughly superimposes a simplified housing typology on the Ahmedabad households' income distribution for 2011. It shows the types of housing that are close to being affordable to households that can now only afford to live in slums and challis. Ideally, an increase in supply for these types of housing at the limits of affordability should allow households with increasing income to leave their slums for better housing conditions. Also **upgrading** all slums/challis offers a very substantial increase of housing with an environmental quality that is broadly comparable or just below the low end of the formal housing market—and considerably better than the unavoidably squalid conditions in slums without basic neighborhood infrastructure and basic water and sewerage connections. Currently, however, these housing types are not fully legal formal housing, so the supply cannot be expanded legally. The lowest cost new formal housing supply is only affordable close to the median of the income distribution. See also Section IV and V for illustrations and more detail on how high standards for formal housing drive up the cost of new supply and possible modifications.

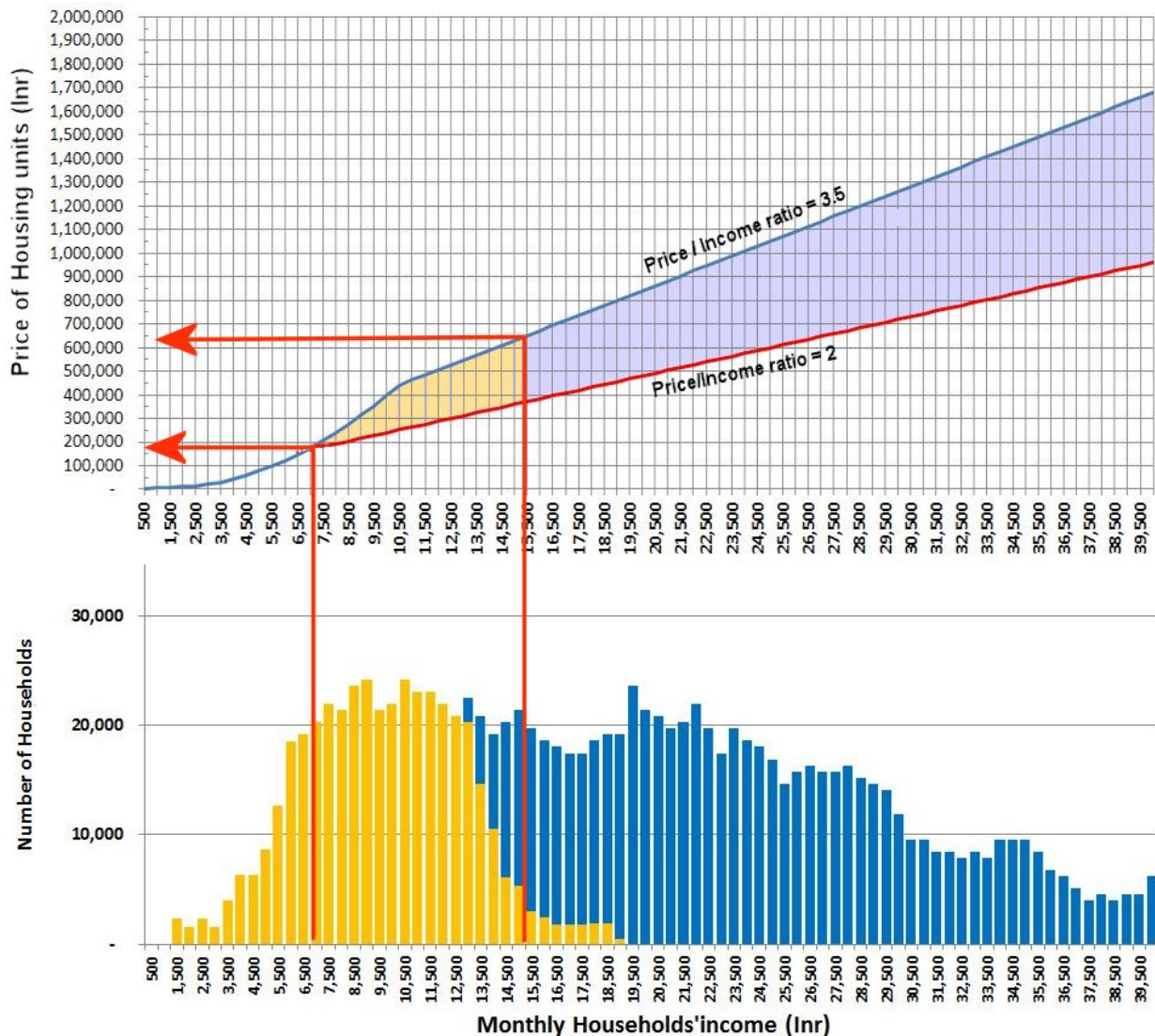
Taking the current income distribution of slum/challi dwellers, it is possible to define roughly what housing price each income group could afford. Based on price data collected for different housing typologies in Ahmedabad, we analyze affordability based on a range of price / income ratio (PI ratios). At the very low end of the income distribution, less than INR 7,000 per month, households can hardly afford any expenditure on housing except for a very low rent for a small hut in an existing slum. The 2011 households' income distribution shows that about 8% of Ahmedabad population (or about 24% of the total slum/challi population) has a monthly income below INR 7,000 for whom it is difficult to afford a decent low standard home. For the other 76% of households in slums/challis, it should be possible to find housing solutions much like low-cost 'vernacular' housing solutions that already exist in large quantities in Ahmedabad. As we discuss in Section IV below, this involves investing more in basic infrastructure services in poor neighborhoods and introducing more flexibility in standards for formal housing as currently defined in the General Development Control Regulations (GDCR).

The analysis uses a price-to-income (PI) ratio between 2 and 3.5 for monthly income above INR 7,000 to calculate the range of price that slum dwellers could afford on the current housing market (Figure II.3). Individual households vary in their capacity to save and borrow from banks or relatives, hence the range of PI ratio for the same income groups.

For instance, for a land cost of INR 16,000/m<sup>2</sup> and a construction cost of INR 8,000/m<sup>2</sup>, a dwelling of 12 m<sup>2</sup> would cost INR 1.7 lacks if the same land use standards as much of the vernacular housing stock in Ahmedabad (84% coverage, 3 floors). The same 12 m<sup>2</sup> dwelling on 3 floors would cost 2.4 lacks or 38% more if GDCR standards were used. In fact the GDCR standards penalize low buildings as they force using a large amount of land on the ground for large streets, open space and parking.



## Ahmedabad - Income distribution 2011 and housing affordability



Source: Authors' Calculations

### Figure II.3: Households' income distribution and affordable housing prices

The range of affordable price for households with a monthly income between INR 7,000 and INR 15,000 (which includes the majority of the population currently living in slums) is shown in yellow shaded area in the upper part of the graph of Figure II.3. For a PI ratio of 2 the price of housing should be between 1.8 lakhs to 4 Lakhs. (180,00–400,000 INR). If small formal projects were allowed to be built in order to meet these target costs with varying standards depending on land prices and location, households currently living in slums would be able to move to formal housing when their monthly incomes increase above 7,000 rupees. However, the rigidity of the current standards freezes the supply of low-cost formal housing and condemns current slum/challi dwellers to stay in slums/challis when their income increases, paying always more for the same low quality dwelling.

Figure II.3 also illustrates some important parameters regarding affordable housing policy. Since nearly half the population cannot afford a new formal home, the demand for any subsidized housing will be tremendous, and will far outstrip the capacity of the public sector. Currently,

only about 11 percent of the housing stock is public housing<sup>9</sup>. We estimate that the public sector produces about 5000 units per year, since the central government stepped up subsidies for public housing over the last 5 years. Production would need to increase dramatically even over these higher level to meet all this need. It is also very likely that subsidized housing will not reach lower income groups, since there is such potentially large demand for subsidized public housing amongst the middle class.

### III. Evolution of the Population, Built-up Areas and Supply of Housing in Ahmedabad, 2001-2011

The analysis of household income distribution shows that household expenditure is growing very rapidly in the AMC as it is all over the state of Gujarat. Employment opportunities and a buoyant economy have raised aspirations for better housing conditions and the ability to spend to achieve them. The ability of the supply side of the market to respond to those rising demands for housing determine how much of that increase in spending translates into better quality, larger and well located housing and how much merely translates into stiffer competition and higher prices for the housing options available on the market. Figure II.3 showed that over the last ten years, the median income, although close to three times higher in nominal terms, remains very close to the threshold for affording to shift to purchasing a well located new formal home.

#### Change in population

The population of Ahmedabad has increased by 23% ,by an average of 2.1% a year, between 2001 and 2011. By contrast the population in slums has grown by only 1.6% a year (*Figure III.1*). Slum populations have normally a higher natural growth rate and absorb the bulk of the migration rate from smaller towns and rural areas.

Ahmedabad - Growth of slum and chalis population and areas between 2001 and 2011

	2001	2011	Absolute increase	% increase	Yearly increase
Ahmedabad Population (AMC area) [1]	4,520,255	5,570,585	1,050,330	23%	2.1%
Built-up area (Km2) [2]	185	212	27	14%	1.4%
Built-up density (p/ha)	244	262	19	8%	0.7%
Slum and chalis area (Km2) [3]	14.9	15.3	0.4	2%	0.2%
Density in slums (p/ha) [4]	1070	1230	160	15%	1.4%
population in slums and chalis	1,596,800	1,880,300	283,500	18%	1.6%
% of slum and chalis population over total AMC population	35.3%	33.8%	-1.6%	-4%	-0.5%
Population living in formal areas (outside slums and chalis)	2,923,455	3,690,285	766,830	26%	2.4%
Areas of formal development	170	197	26	16%	1.5%
Densities in formal areas	171	187	15.9	9%	0.9%

[1] 2001 and 2011 census data corresponding to current AMC boundaries

[2] built up area as measured on Google Earth imagery dated Oct 2000 and Jan 2001 for the year 2001 and May and Nov 2010 for 2011

[3] Slum areas measured on Google Erath imagery dated as above. Were included slums that have no apparent planned street structures and settlements with streets narrower than about 3 meters

[4] Average densities in slums extrapolated from a detailed topographical and social survey in 15 slums done by SEWA-MHT in 2001 and 2011

#### Figure III.1: Evolution of population and built-up areas in the AMC, 2001-2011

Source: Authors' Calculations

<sup>9</sup> Annez et al: 2010 : "Working with the Market: a New Approach to Reducing Urban Slums in India" World Bank Policy Research Working Paper 5475 Washington DC: World Bank



The area of land developed between 2001 and 2011 has increased at a slower rate than the population, resulting in higher densities in the built-up areas in 2011 than in 2001. This increase in average built-up density is exceptional for a city of the size of Ahmedabad. Cross country analysis over cities in across the income range shows that when household income rises, built up densities go down (Angel 2011). Given that between 2001 and 2010 the nominal median household's income has increased by 170%, **this countertrend in density land development shows a serious land supply constraint.** (It is important to note that we speak here of built up density only, not overall density. That figure is lower due to the fragmented nature of development at the periphery, see Figure III.5) This land supply constraint, however, is not caused by a lack of transport infrastructure – as it is often the case in other parts of India – Ahmedabad has developed a large number of arterial roads during the last 10 years – but by severe regulatory constraints that are discussed in a section below.

The areas occupied by slums have barely increased by 2% over 10 years, while the slum population has increased by 18%. This implies that a densification of existing slums occurred during this period. The morphology of slums allows this densification through the occupation of existing open space or the subdivision of existing dwellings. Thus contrary to some popular perceptions, slums and challis do not waste large tracts of valuable urban land. They are using this resource more and more parsimoniously as slum/challi populations expand—much more so than other urban development.

## Change in slum population between 2001 and 2011

Evaluation of the number of dwelling units produced per year between 2001 and 2011 per type of land use

Type of use	year 2001				year 2011						
	built-up area (km <sup>2</sup> )	density (p/ha)	population	Households or housing units	built-up area (km <sup>2</sup> )	density (p/ha)	population	Households or housing units	Additional number of units created	Average number of units created per year	Total addition to the built up area (ha)
Mix Built-up	121.14	138	1,669,096	370,904	142.51	148	2,104,960	473,038	102,134	10,213	2,137
Old City	5.60	665	372,633	82,806	5.60	750	420,020	94,389	11,583	1,158	-
Slums and challis	14.92	1,070	1,596,839	354,847	15.29	1,230	1,880,300	422,551	67,704	6,770	36
Garntal	10.73	700	751,161	166,922	11.69	850	993,485	223,261	56,340	5,634	96
Industry	15.77	50	78,853	17,523	16.69	60	100,161	22,509	4,986	499	92
Villas in large estates	17.25	30	51,753	11,500	20.47	35	71,660	16,104	4,603	460	322
<b>Total</b>	<b>185.41</b>	<b>244</b>	<b>4,520,335</b>	<b>1,004,501</b>	<b>212.25</b>	<b>262</b>	<b>5,570,585</b>	<b>1,251,852</b>	<b>247,351</b>	<b>24,735</b>	<b>2,684</b>

Sources: aggregate population :census data; area per land use type: Google earth image measurements; population per land use type: density measurement  
File: AB\_pop and land use 2000\_2011.xlsx

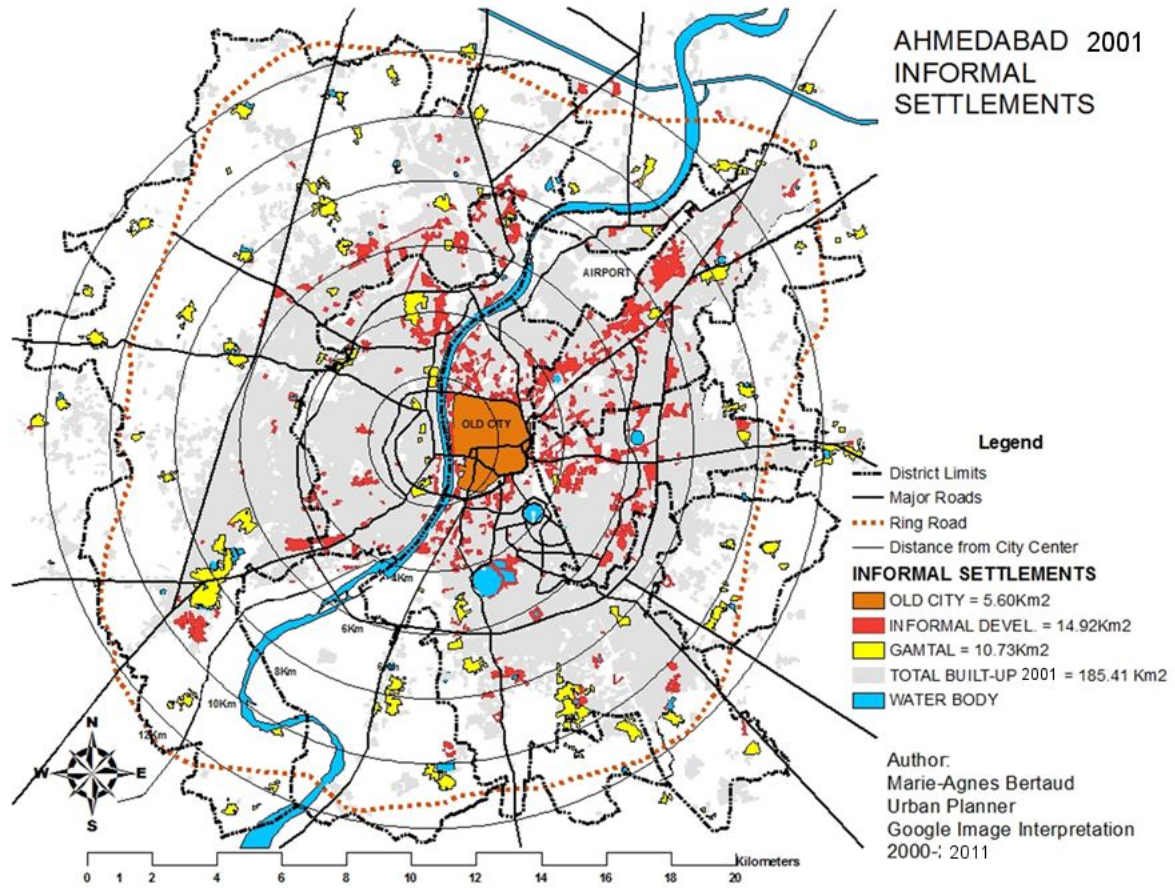
**Figure III.2: Estimate dwelling units produced between 2001 and 2011**

Source: Authors' Calculations.<sup>10</sup>

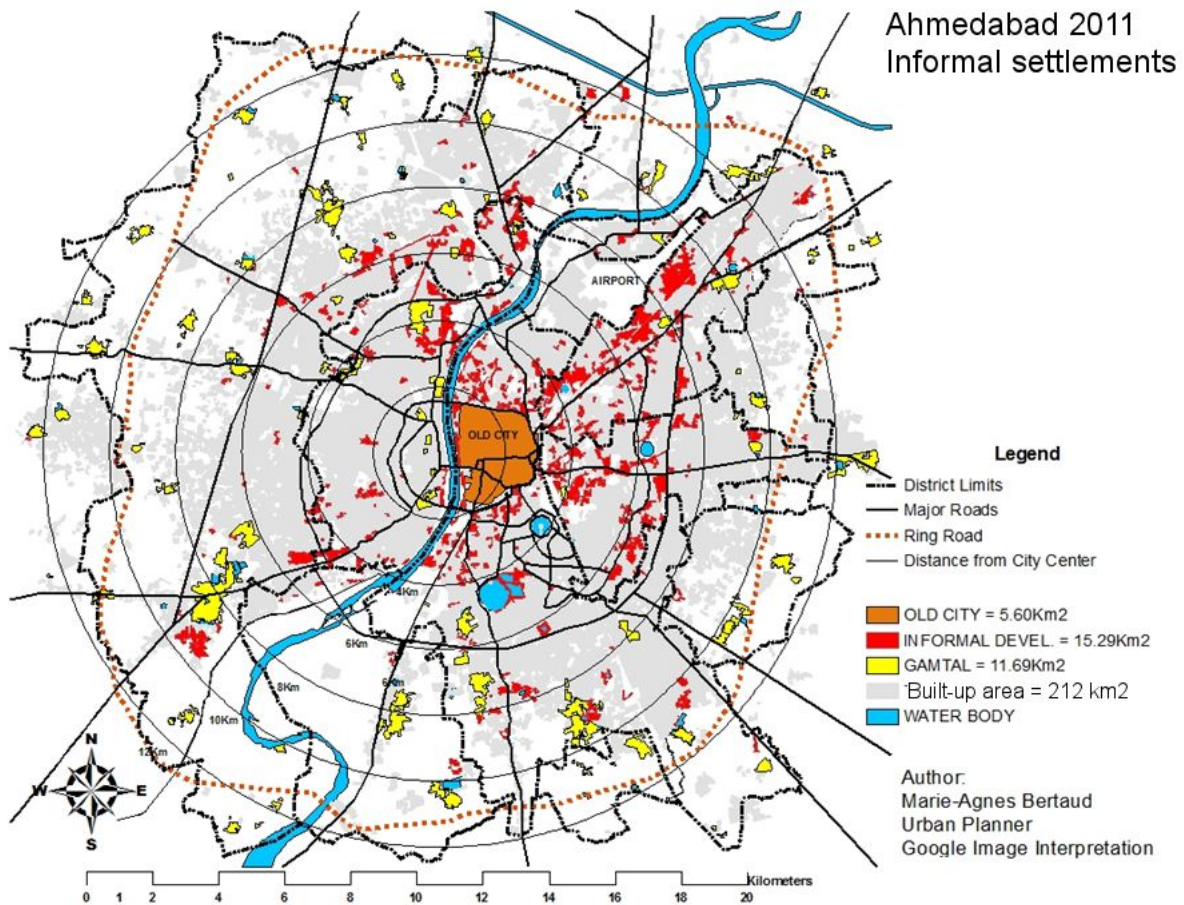
By measuring the changes in the different types of land use within the built-up area and the increase in the total population it is possible to extrapolate the number of dwelling units built in each type of area between 2001 and 2011 (*Figure III.2*). About 25,000 dwelling units were created on average each year between 2001 and 2011. Of these, about 6,700 units were created in slums/challis. So while the areas occupied by slums/challis have not increased much, about 27% of the new housing stock has been built in slums.

The maps in *Figure III.3 and III.4* show the spatial distribution of slums within the metropolitan area in 2001 and 2011. Heavy concentrations of slums are found in the East and North of the city. On the positive side, most slums are relatively small and close to existing primary infrastructure.

<sup>10</sup> This table shows a comprehensive tally of all additions to built space in the ten year period. Categories are based on typologies that could be identified distinctly using Google Earth imagery and readily ground truthed on a sample basis. Population estimates were based on extrapolated sample densities and reconciled to cover the entire census measured population. The large category of mixed built up includes a variety of housing types that would be legal or illegal to build today such as the 'vernacular housing discussed below, high or medium density new formal housing. These cannot be readily distinguished with satellite imagery. Obtaining precise estimates of the areas under these different types would have required a very substantial door to door survey effort that was beyond the scope of this study. Therefore these diverse components of mixed built up were not shown separately in the table.



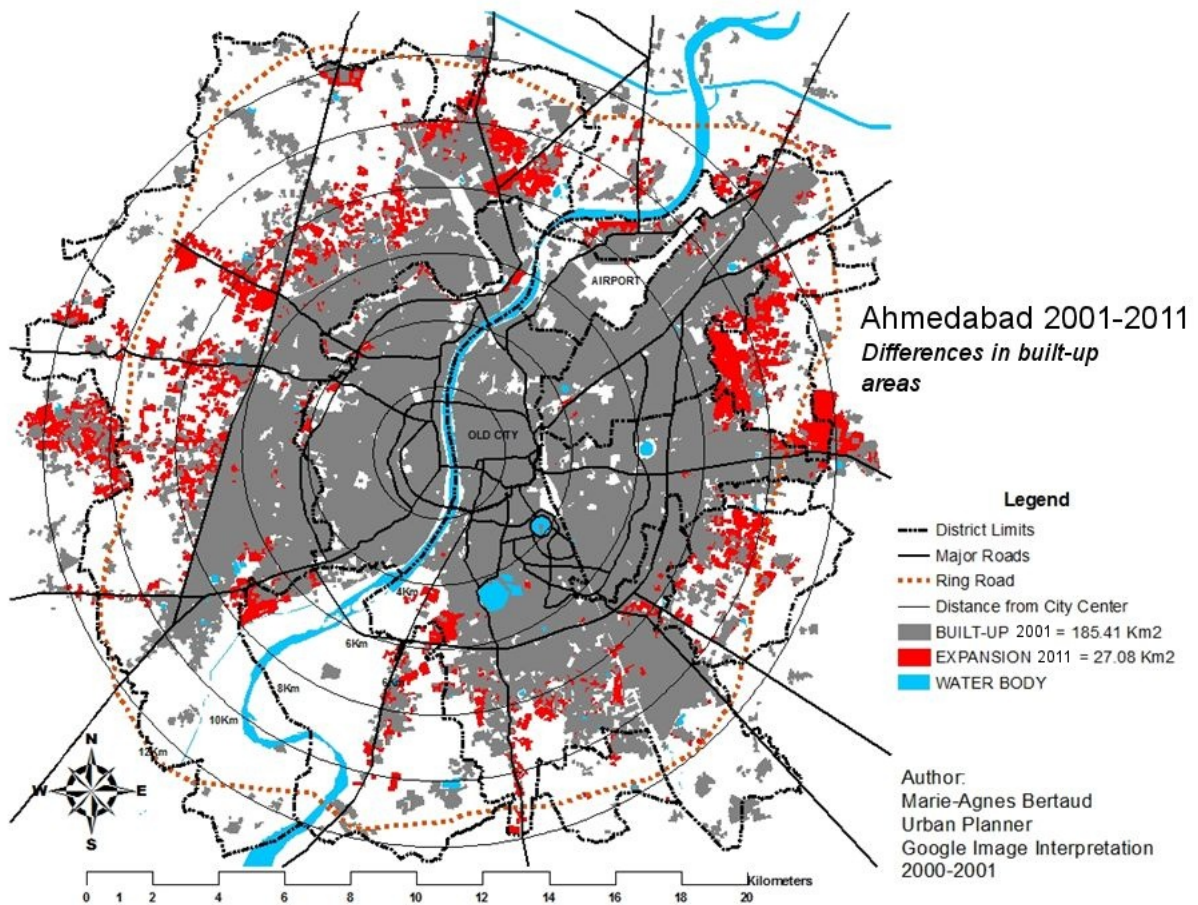
**Figure III.3: Built-up area and areas occupied by slums in 2001**



**Figure III.4: Built-up area and areas occupied by slums in 2011**

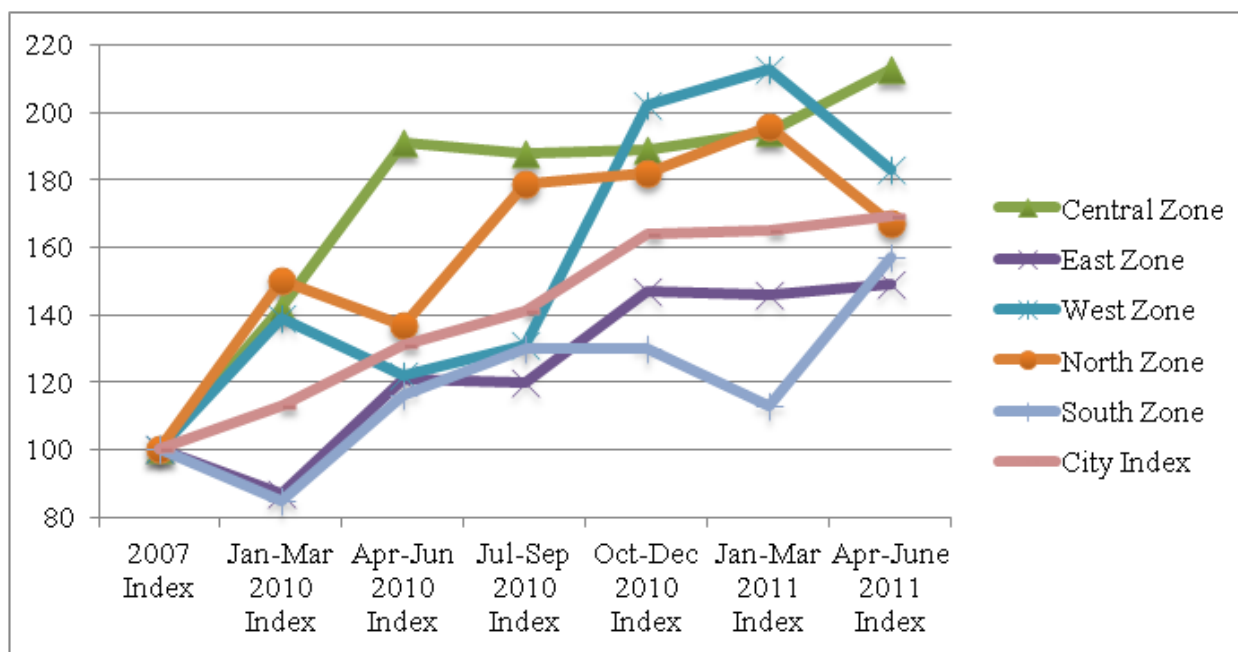
The map of *figure III.5* shows the extension of the areas built between 2001 and 2011. The fragmentation of the urbanization in the Western part of the city contrasts with the relative compactness in the East. One of the reasons might be the difference in income between West and East. The higher income households in the West can better afford the transport costs linked to the dispersion. The large number of TP schemes in the West may also account for this dispersion as we discuss below.





**Figure III.5: Location of newly developed areas between 2001 and 2011**

A further indication of tightly constrained markets comes from real estate prices in Ahmedabad. As is the case all over India, such information is very limited and fragmentary. However what data we have show price increases in Ahmedabad well in excess of the inflation rate. Indeed in the last four years, residential prices for the city as a whole have increased by nearly 70 percent, and in the last year, by nearly 30%. These rates substantially outpace inflation and last year's price increase is roughly double the growth of Gujarat state domestic product. Prices in west Ahmedabad neighborhoods have all been in excess of doubling in the last four years—increasing at a rate of 20 percent per annum. Figure III.6 shows price increases by neighborhoods and Annex 2 provides more details on residential price developments. Amongst the 13 Indian cities covered by RESIDEX, Ahmedabad has the sixth highest price increase since the index was started in 2007. These figures should be cause for concern. Since they outpace the growth of basic economic aggregates and in median household spending, this means housing is ever more out of reach of the population at large.

**Figure III.6: Evolution of Real Estate Prices in AMC Zones**

Source: National Housing Bank Residex Index. See also Annex 2

#### IV. Land Management and Real Estate Policy

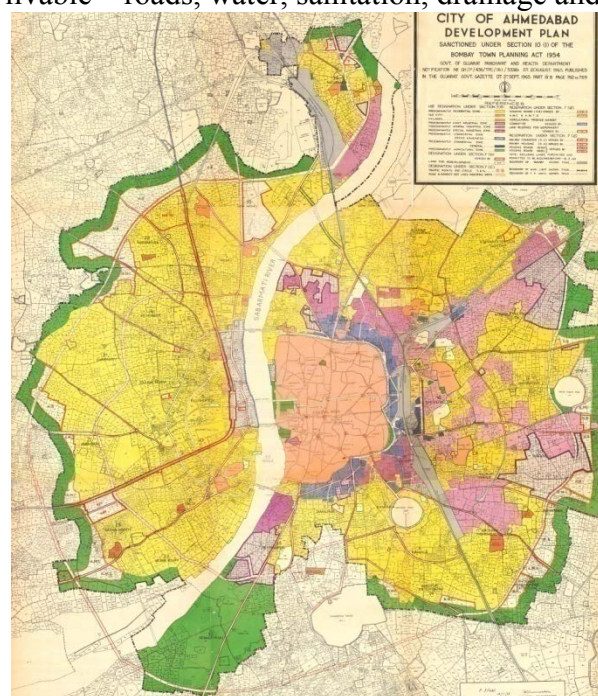
##### IV A. Salient Developments in Planning and Real Estate Policy and Programs in Ahmedabad

Ahmedabad offers fertile ground for piloting of an alternative approach to improving living conditions at scale in India's cities. The AMC and AUDA have shown both a capacity to adapt policies to changing conditions. They have designed and financed innovative investment programs that respond to the needs of the broader community and treat even the poorest residents as full citizens worthy of decent basic services and capable of paying for them. Below we summarize three areas of successful innovation with lessons of relevance for the proposed strategy.

## Evolution of Urban Planning in Ahmedabad: From Interventionist Controls to Pragmatic Adaptation and Progress<sup>11</sup>

In the early years after Independence and the establishment of the State of Gujarat, Ahmedabad followed quite a typical interventionist model for town planning. In 1965, the First Comprehensive Development plan for Ahmedabad was drawn up. It sought to limit growth with a green belt surrounding the city, thus placing reservations on large tracts of private land at the periphery of the city. The plan defined the allowable FARs in the city at 1-1.5, and specific plots were tightly defined for residential, commercial and industrial use, not necessarily consistent with the current uses. Many private plots were reserved for public uses. These were to be appropriated using the Land Acquisition Act. However, these expansive plans were never fully realized, due to a lack of funds, among other reasons. The sheer political and social disruption of acquiring such large tracts of land made ambitious plans like these impracticable. The net effect of these ambitious goals underpinned by far more modest means was to create a sort of ‘property rights limbo.’ In strict legal terms, many lands came under the threat of state appropriation, and became embroiled in law suits. In these circumstances, land owners resorted to ‘grey market’ transactions often with poor and ill-informed households. This created even more competing and unresolved ownership claims to many plots of land in the city.

This state of affairs was exacerbated with the passage of the central Urban Land Ceiling Act in February 1976, which covered urban areas in the State of Gujarat, including Ahmedabad. Vacant lands notified under the act also fell into this ambiguous status where—due to the concrete risk of expropriation and legal action by the state, owners were pushed to avoid investing and optimizing the use of highly valuable resources—well located urban lands. Instead, this land was often sold to low-income households who purchased the land using legal procedures such as power of attorney, but which conferred no formal property rights or change of title. In their extra legal status, these neighborhoods were not provided with the basic neighborhood infrastructure services that make cities livable—roads, water, sanitation, drainage and waste collection.



**Figure IV.1 : Development Plan of Ahmedabad, 1965**

<sup>11</sup> Drawn from Patel, Bimal 2009. “Land Management Reforms and Future Agenda for Gujarat” Chapter 23 in India Infrastructure Report 2009: Land: A Critical Input for Infrastructure. New Delhi: Oxford University Press

Source: Sanctioned Development Plan 1965, Drawing Branch, Ahmedabad Municipal Corporation

Interventionist planning policies continued in the subsequent plan for Ahmedabad sanctioned in 1976. But by the mid-1990s, it was clear that this approach had proved a failure. There was substantial illegal growth at the periphery, FSI and zoning regulations were widely ignored, and artificial scarcities created by these restrictions led to rapid price increases. At the periphery, infrastructure development moved slowly. The main tool for urban expansion, the Town Planning Schemes, a form of land readjustment, took years to negotiate and execute, and landowners gave up their lands without benefitting from infrastructure investments, oftentimes for ten to twenty years. Funds mobilized under the schemes, by the time they were negotiated and approved, were inadequate to build the necessary infrastructure.

In 2001, subsequent to the Bhuj earthquake, the Town Planning Schemes were revamped to move more quickly through modest shifts that had a large impact.

- The Revenue Department allowed AUDA to build the infrastructure as soon as the draft plan was approved, but before all the tenure issues in each plot were addressed.
- The share of land appropriated was increased modestly so that excess lands could be auctioned to cover infrastructure costs.
- Private Contractors could be hired to prepare the schemes, thus avoiding potential bottlenecks due to shortages of skilled government town planners.

Together these changes made dramatic improvements in the speed of execution. Between 2000 and 2009, Town Planning Schemes, vigorously pursued by AUDA and the AMC, developed over 200 sq km on the urban periphery vs. 100 sq km in the preceding 25 years.

Table IV.1: Town Planning Schemes in Ahmedabad

<b>T P Schemes</b>	<b>AUDA</b>	<b>AMC</b>
Up to 1999	29	58
1999-2010	74	43
Total	103	101
Total Area Covered (sq km)	153	148

Source: Urban Planning Cell, Ahmedabad Urban Development Authority, Ahmedabad Urban Planning Cell, Ahmedabad Municipal Corporation

The Development Plan for 2001 also changed course. Over 100 sq. kms of land in the periphery were zoned for new residential growth. Rigid reservations, such as the green belt designation, were lifted. Appropriation of private land for public purposes was abandoned, replaced by more proactive use of the Town Planning Schemes.<sup>12</sup> 50 percent of reservations not yet acquired were de-reserved. The FSI limit in the city was also raised—albeit quite modestly.

<sup>12</sup> Balleney, Shirley and Bimal Patel. 2009. “Using the ‘Development Plan—Town Planning Scheme’ Mechanism to Appropriate Land and Build Urban Infrastructure” Chapter 24 in India Infrastructure Report 2009: Land: A Critical Input for Infrastructure. New Delhi: Oxford University Press



## Investing in Ahmedabad's Low-Income Neighborhoods: The Slum Networking Project

Ahmedabad has a long history of programs to provide basic services to the poor. Even before independence, the Ahmedabad local government focused, albeit sporadically, on large programs for improving environmental conditions in low-income neighborhoods in the old city and the chawls.<sup>13</sup> From the 1970s, the AMC has sponsored low-cost programs that help households obtain in house water connections and toilets at a modest cost. However in the mid-1990s, Ahmedabad—without prodding or sponsorship either from the center or the state-- embarked on a home grown ambitious and comprehensive program to improve whole neighborhoods as a community effort bolstered by strong government support.

The Slum Networking Program (SNP), started in the mid-1990s, was successful in establishing a model that worked at scale, benefitting over 14,000 households. The model comprised the following features:

- Provision of seven basic services based on consultations with beneficiaries: water (in-house connection), underground sewerage connection to each house, in house private toilet, roads, solid waste collection, storm water drainage, and street lighting. The total cost of these services in the late 1990s and early 2000s averaged INR 22,000 (<\$US 500) per household.
- Beneficiaries contributed roughly 10 percent of costs (The Municipal Corporation lowered the share from the originally proposed 33 percent.) Organizers report that beneficiaries would have contributed more. Indeed many were incredulous that such a package would be provided for such a small contribution. It was not uncommon to pay INR.5000 just to get an illegal water line.
- The program offered scope for local politicians to assist their constituents. They could pay up to one half of the beneficiary contribution provided they did so for all households in a given community.
- NGOs were mobilized to organize CBOs in each slum. These were responsible for collection of contributions, work out a revised site plan acceptable to the community to accommodate infrastructure, and coordinate demolitions by the households themselves (Some households lost part of their housing units. However, negotiations across the NGOs, the community and the corporation resulted in design standards that minimized such demolitions.) A fee per household was paid to the NGO by the Corporation to defray their organization costs<sup>14</sup>.
- The community supervised the quality of the works, and had the final sign off for disbursing their share of costs. Beneficiary contributions were collected in an escrow account that only the CBO had authorization to release once they were satisfied with the completed works.
- Women's involvement and engagement in making the program work was recognized, with women's name coming first on title and on utility bills when SEWA Bank financed.
- Households covered by the program received a ten year non-eviction guarantee from the Municipal Corporation, but did not receive clean tenure for their land parcels—a clear impossibility in many cases.

---

<sup>13</sup> Spodek, Howard. 2011. **Ahmedabad: Shock City of Twentieth Century India** Bloomington: University of Indiana Press

<sup>14</sup> Unfortunately, these payments to NGOs were often delayed and sometimes not paid at all. This approach, along with the requirement that NGOs finance 30 percent of the community organization costs undermines the scalability of the program.

The partnerships in the program had many advantages:

- The participation of the NGOs was critical for building the trust of the slum households to contribute to a scheme. Unfortunately, slum dwellers are commonly approached by people promising service connections against payment. But the promises either do not materialize or the services disappoint. The presence of a well-established NGO that potential participants could visit or whom they already knew, made a big difference.
- The on-site supervision of the beneficiaries led to better quality works, less pilferage, and rejection of substandard building materials.
- The communities reported illegal service connections to the authorities, and they paid their property taxes after the upgradation. The service providers, including the electricity company (not part of the upgradation) reported increased revenues as a result.
- The households benefitted most significantly in terms of reduced health care expenditures and lost work time. On average, women gained 1-2 hours per day from time no longer spent queuing for water. Hygiene standards (frequency of bathing and washing of bedding, etc.) improved significantly and open defecation (particularly burdensome for women who need to seek privacy) was eliminated.
- House values and rents increased substantially. Considerable investments have been made in adding stories<sup>15</sup>, improving housing quality, and building low-cost informal rental units in the improved slums. Some beneficiaries have sold their homes and traded up within the slums. Others have sold out their slum home and purchased a low-cost formal home. Slums improved over six years ago remain well maintained and building continues to boom in these informal areas.
- In Eastern Ahmedabad there were no sewer lines prior to the project. To accommodate the SNP, the corporation extended sewer services to this part of the city.

### **Lessons for the Future**

It was not possible to upgrade slums on public lands other than those of the municipal corporation because central or state agencies did not wish to cooperate, particularly in providing a ten year no-eviction guarantee. Even today, because of refusals to provide the necessary no objection certificate, it is impossible to upgrade slums on centrally owned land, even without any promise of tenure. Means to address these limitations are discussed in Section V below.

The communal violence in 2002 reduced the momentum of the program. A more lasting constraint has been the introduction of alternative, highly subsidized housing programs under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) established in 2005. This program has diverted government attention from the scalable and cost-effective SNP approach. It is clear from the levels of prevailing market prices, and from past experience of affordable formal housing provision—be it the center, the state, the AMC or private developers—that government sponsored new formal housing cannot be produced at the scale in required for today's large population living in slums and chawls. Today, even after AUDA has substantially accelerated its building program to about 5000 houses per year, only about 11 percent of the housing stock is public<sup>16</sup>. No slum redevelopment schemes have been fully negotiated, much less

---

<sup>15</sup> Contrary to what some might expect, none of the houses in areas improved under the SNP collapsed in the 2001 earthquake. Modern formal housing suffered more damage. Advice from NGOs like MHT SEWA on safe building techniques may have contributed to this positive outcome.

<sup>16</sup> Annez et alia: 2010

completed, and the provision of low-cost housing through reservations, to the extent it is monitored and measured, falls short of the stipulated production.<sup>17</sup>

Promises of government provision of formal affordable housing cannot be met for the over four lakh (422,000) households in slums and chawls. It is neither feasible nor affordable. Relying on such promises draws government energy and managerial resources from less glamorous but more cost effective slum improvement programs that offer such tangible benefits to their communities and their neighbors—and it creates unrealistic expectations in communities. As we show below in Section V, Ahmedabad could achieve dignified and decent housing for all if it took strong steps to build a multi-pronged, low-cost housing program, with its own home grown initiative the SNP as the foundation that could provide results at scale—reinvigorated with strong support from government. More complex programs like slum redevelopment may come up in some areas. Excess demand for whatever public housing the government builds will continue and make it hard for the poor to gain access. Providing a guarantee that the AMC will upgrade all slums and chawli neighborhoods can create a stock of modest but dignified housing for the many households who cannot afford more—and who can improve their homes but cannot create the network infrastructure that will make their neighborhoods healthy and safe places to live.

**Figure IV. 2 Neighborhood Improvements under SNP**



Source: Self Employed Women's Association Mahila Housing Trust

<sup>17</sup> Deuskar, Chandan. 2011. "Town Planning Schemes in Gujarat". Massachusetts Institute of Technology Master's Thesis Department of Urban Studies

## **From Public Lands to Public Goods—Ahmedabad’s Creative Disposition of Public Lands AUDA Land Auctions in Town Planning Schemes**

As mentioned earlier, when AUDA revamped the Town Planning Scheme mechanism in 2001, it introduced a mechanism for self-financing the infrastructure in the scheme. As with all public infrastructure programs, some private land was taken for rights of way, public facilities like schooling, etc. The town planning scheme’s equitable approach to the taking of private land—requiring all land owners to sacrifice some land for public infrastructure, was just one of the innovative features of the schemes. Under the old schemes, an impact fee was levied to fund the infrastructure. As with most taxes and levies, this was unpopular, difficult to collect, and ultimately yielded meager financial resources. The revamped TP schemes also took a small percentage of the private land for creating saleable well serviced plots with clean title. These plots were auctioned off for very substantial prices because of these very attractive attributes. As a result, the recent TP schemes dramatically accelerated infrastructure investments, notably the new ring road sanctioned in 2002 and now partially completed.

Table IV.2 below summarizes the impressive new infrastructure investments made by AUDA in the last 10 years, while Table IV.3 outlines land appropriated for auction under TP schemes.

**Table IV.2: Key Infrastructure built by AUDA between 1999 and 2010**

Infrastructure	Proposed Length/ Coverage	Expenditure Rs (Cr)
Roads	1472 km	825
Water Supply Network	144 sq km	80
Water Treatment Plant (Not Included in D.P)	275 MLD capacity at Jaspur	106
Sewerage Network	144 sq km	83
Sewerage Treatment Plant (not included In D.P)	At Vasna	106.9
Sewerage Treatment Plant and terminal station	At Vinzol	36.8
Storm Water Disposal	144 sq km	101

Source: Urban Planning Cell, Ahmedabad Urban Development Authority, Ahmedabad

**Table IV: 3 Land Appropriated in all TP Schemes in Ahmedabad, 2010.**

No.	Land Allotted to Appropriate Authority	AMC		AUDA	
		Total 101 Nos. of T.P.S for 148.7 sq km		Total 103 Nos. of T.P.S for 153.8 sq km	
		Total Area in sq km.	%Age (AMC)	Total Area in sq.km.	% Age (AUDA)
1	Roads	17.78	11.69	21.79	14.2
2	Schools	0.85	0.57	1.01	0.7
3	E.W.S.H	2.89	1.94	4.53	2.9
4	Salable Plots	3.64	2.45	12.06	7.8
5	N.C./ P.U. / Others	5.54	3.72	4.69	3.1
6	Gardens, O.S., PG	2.57	1.73	4.45	2.9
7	Total Land to A.A.	33.27	22.38	48.53	31.6
8	Private F.P. Area	115.4	77.6	105.3	68.4

Source: Drawing Branch, Ahmedabad Municipal Corporation, Ahmedabad Drawing Branch, Ahmedabad Urban Development Authority, Ahmedabad EWSH-Economically Weaker Section Housing, NC-Neighborhood Center, PU-Public Utilities, OS-Open Space, PG Playground, AA-Appropriate Authority, ie, Municipal Corporation, Development Authority or other agency designated by the Town Planning Act.

## **The Sabarmati River Project: Using Public Land to Create Quality Public Spaces**

Civic leaders in Ahmedabad had nurtured the idea of creating high quality public space on the riverfront in Ahmedabad for long years, starting with plans drawn up in the 1960s with the help of distinguished international architects. When the dam constructed at Baroi in 1976 transformed the Sabarmati's flow from seasonal water availability during the monsoon to a continuous flow, it became possible to move on from ideas to designs and plans. Once the river became perennial, it was possible to undertake land reclamation by building embankments. In 1997, the Sabarmati Riverfront Development Company was formed as a special purpose vehicle to execute an ambitious long term project to transform the riverfront. Reclaimed along the riverfront would offer all the amenities of prime waterfront land, and could constitute a public realm along both sides of the river comprising public promenades, parks, and informal markets. At the same time the works could improve the river's flood carrying capacity and even out and protect the very irregular unstable banks that characterized the Sabarmati's meander through Ahmedabad. Interceptor sewers embedded in the reclaimed land would capture untreated sewage coming through the storm water drainage lines and divert it to a sewage treatment station downriver, thus making the environment much cleaner and more agreeable. This creative investment concept compensates for the uneven coverage of sewerage networks common in many Indian cities. Another very important, but also controversial project component, involved relocation of the population of an estimated 14,000 households living in the slums on the riverbanks, subjected to regular seasonal flooding. They were to be moved to basic public housing as nearby as possible—and many, but not all, have been successfully relocated as of this writing. As of this writing, the heavy engineering, interceptor sewers, and embankment work have been completed, and 200 hectares of riverfront land have been reclaimed. Redevelopment of the city around this riverfront will, of course, be a long-term process.

Clearly the public at large and nearby areas of the city would benefit greatly from this project. However, if the project focused on creating public goods such as parks open to the public at no cost, no private sector investor would step in to build and finance such a project. The city was in no position to borrow for this investment, and even if financing were found, the project would not generate revenues to pay back a loan or a municipal bond. The project cost was substantial. Today, it is estimated at roughly Rs. 800 crores (about \$200 million<sup>18</sup>). However the value to the general public and to neighboring areas was also substantial. A compromise was found. The Ahmedabad Municipal Corporation (AMC) obtained an agreement from the Government of Gujarat to cede the property rights over the reclaimed river bed to them. A small fraction, currently estimated at 15% of total reclaimed land was put aside for future sale upon project completion. The estimated market value of this land is sufficient to cover all project costs, including the relocation of the residents there. During construction, the AMC mortgaged other lands to obtain loans, and later, as the works progressed, the mortgages were shifted to the reclaimed lands earmarked for future sale. With judicious use of public land, resources were mobilized to provide infrastructure that made the river itself cleaner and transformed the riverfront area into a public space for all to enjoy. Standing on the principle that no public lands should ever be sold to private parties would have meant accepting the status quo for a long time to come. That status quo meant that all high value riverfront lands would stay in the hands of well to do private parties and inaccessible to the public other than the shifting population who lived in squalid and dangerous conditions in the slums. The compromise of carving out some valuable commercial space in the reclaimed area generated the finance essential to making this investment in free access public amenities and environmental cleanup possible.

---

<sup>18</sup> At Rs. 50 per US dollar

## IV B. Constraints on the Supply of Housing in the AMC today

As is to be expected in an economy as dynamic as Ahmedabad's, experiencing rapid growth of incomes and purchasing power for many, along with continued migration and population growth, real estate and land management policies need to be recalibrated to meet today's demands. Our assessment of the real estate market developments show that a substantial share of the population must continue to live in substandard housing because formal housing is unaffordable. Across the market, housing is more costly than it need be. Government regulations and processes make it very costly and slow to provide any new formal housing. Uncertainties in the regulatory and property rights system restrain the level of investment in housing—be it in the city center or on the urban periphery. The natural result of such restraints is high prices—for villas, low quality apartments or a room in a slum. Just as the license raj made imported goods scarce and expensive, and items like telephones nearly impossible to get, so do many well intended interventions in real estate and land markets unduly restrict what the private market can offer. Twenty years ago, telephones, controlled by government, were unaffordable and unobtainable for most households. Today, the private sector—not the government—has provided cell phone service so inexpensive that most urban households have access. Even though well to do households consumer more and better services— basic telephone connectivity is very widespread. A similar process of unleashing lower cost private supply could be achieved for housing. The most important constraints observed in the Ahmedabad housing market, based on our assessment, are discussed below:

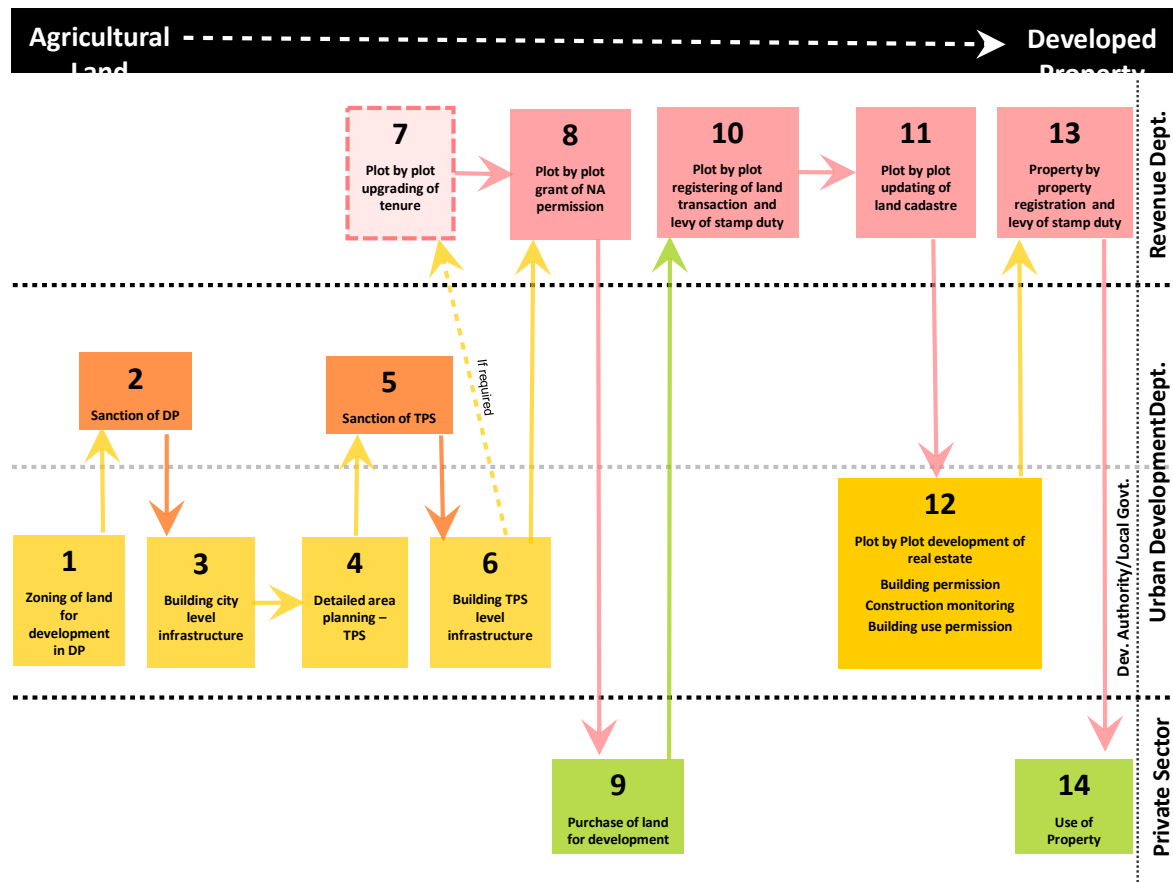
### Constraints on Developing Land at the Urban Periphery (Greenfield Development)

While TP schemes and rezoning under 2002 DP have opened up zoning of new urban lands and provided the infrastructure to support urbanization, these benefits are underutilized. The DP of 2002 created 127 sq km of new zoned urban space. However, in ten years, only 27 sq km of this space **--one fifth of the newly zoned urban land --has been developed in ten years.** TP schemes have covered a large percentage of these newly zoned urban areas thereby providing basic infrastructure for urban development. As such, lack of infrastructure is not the reason that 80 percent of that serviced land is unused. If housing prices were stable or declining, one might assume that this is because supply of urban zoned land has outpaced demand. If densities in the peripheral areas were low, then this might suggest a surplus of developable land. But, this is not the case. Land and housing prices are rising quickly all over the AMC area, and the densities in the peri-urban areas, already exceptionally high by international standards, are on the increase. (See Figure III. 1) As can be seen in Figure III.5, much of the new development on the periphery is highly fragmented even in areas with good road infrastructure built under TP schemes. **All of these factors indicate that serviced land zoned for urban development is not the binding constraint on supply.**

Figure IV.3 illustrates a clear constraint on the supply of housing at the periphery—the multiple approvals and costs required to turn serviced urban zoned land into approved plots with legal housing—even after the infrastructure has been provided in the early phase of the TP scheme. The streamlining of the TP scheme process following the earthquake in 2001 was a very significant reform. It made it possible to build and finance the infrastructure in a TP scheme *before* regularization and rural urban conversion of every parcel is complete. However, it takes years to complete the plot by plot approval that regularizes fully the new urban use and building of housing on each parcel. Figure IV.4 shows that no TP scheme commenced since 2003 is fully complete in this sense—and it suggests that the approval of urban rural conversion and final plot boundaries are currently the bottlenecks—at steps 7 and 8.

Clearly many parcels have been built nonetheless. Many of these may be the parcels that got approvals and rural urban conversion early on or those whose new boundaries have shrunk but do not overlap with the old boundaries of other landowners. In the latter circumstance, the risk of a boundary dispute is low and owners may choose to invest even before full formalization. However, for other plots whose boundaries are significantly displaced and overlap with the old boundaries of other properties, the newly created parcels remain in limbo as it takes years to complete the approval of the new boundaries under the scheme. Until those new boundaries are approved, the risks of any substantial investment in housing are very high, probably too high for any but the largest and most powerful investors.

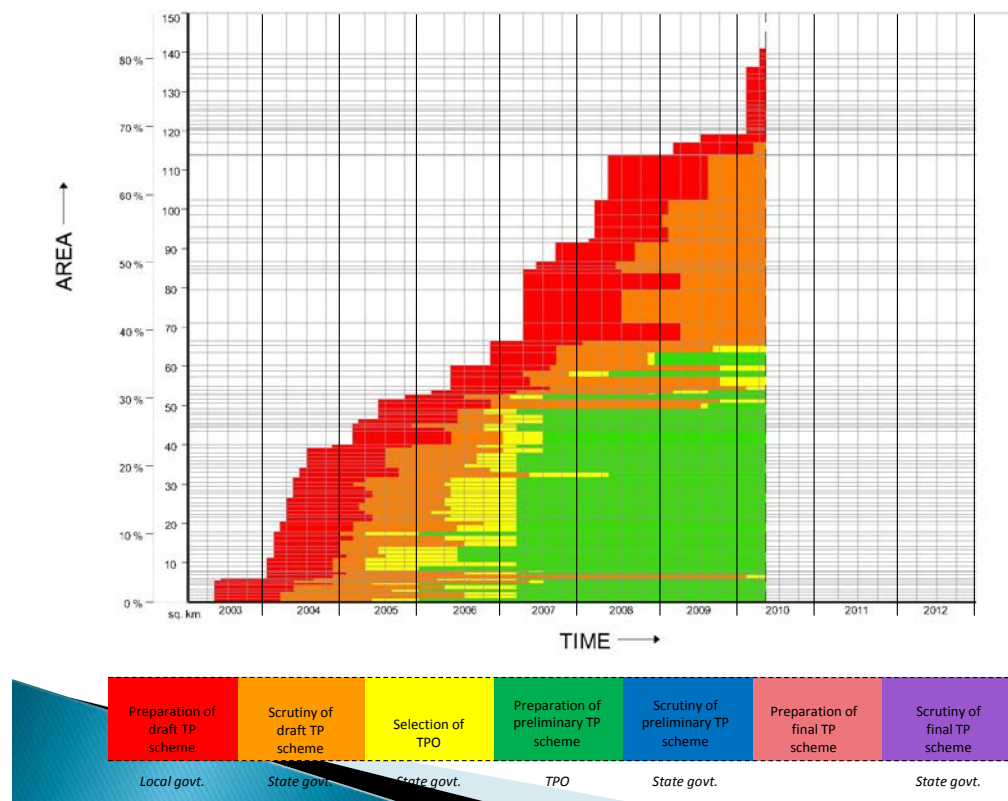
**Figure IV.3: Process for Conversion of Rural Land already Zoned for Urban Development**



Source: EPC Analysis



**Figure IV.4 Progress of Town Planning Schemes Started under the new DP Since 2003**



Source: Authors' calculations and EPC analysis

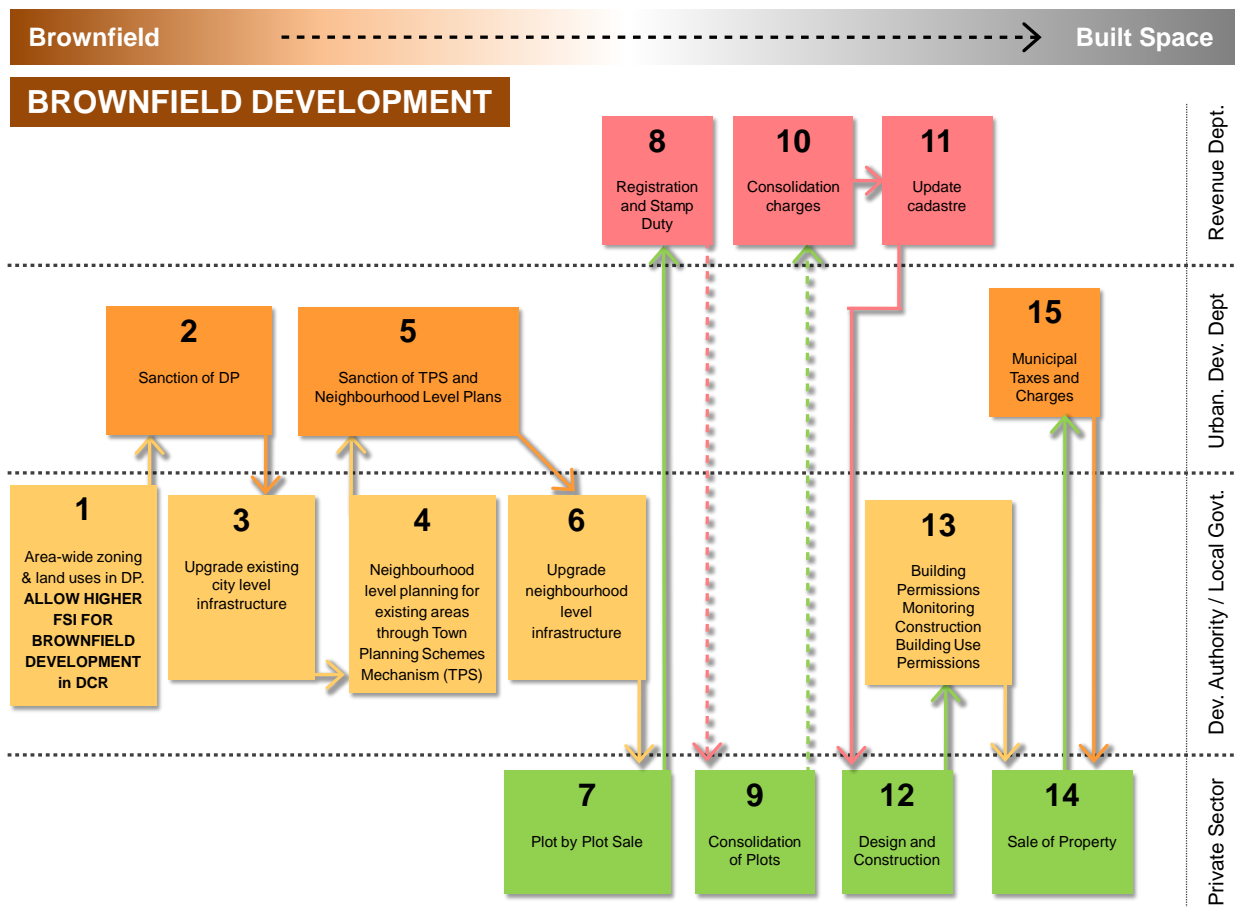
## Constraints on Brownfield Development

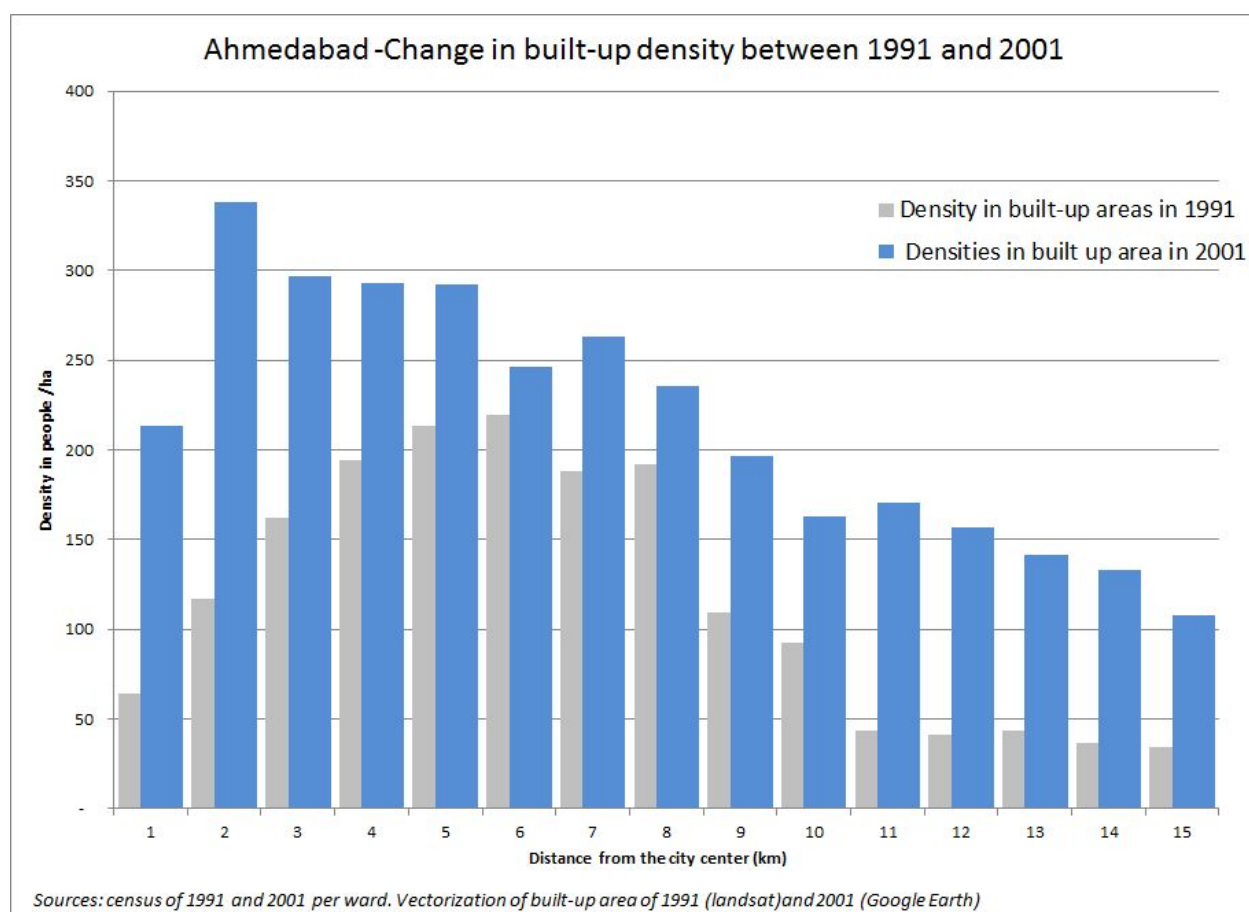
The difficulties of developing lands at the periphery of the city could be expected to make redevelopment of existing urban areas more attractive, and the supply of new and better housing could arise from this source. Our diagnosis indicates that this is taking place to some extent. One source is densification of existing slums and challis. Between 2001 and 2011 the area under slums challis and gamtals has barely increased—0.4 sq km, (See figure III.1)—while the population in these areas has increased by 18 percent. Prior to the Development Plan approved in 2002 and the appeal of the Urban Land Ceilings Act in 1999, government declared land reservations such as reservations for affordable housing, and thus created areas where existing land use was illegal and subject to confiscation by the state. While owners often contested these takings in the courts, the land itself could not be used for legal occupation during the years or decades it would take to resolve the legal dispute. Nonetheless these lands could go onto the 'grey market' in semi-legal sales for informal use such as slum dwellings<sup>19</sup>. Reforms that have eliminated these regulatory takings have for all intents and purposes eliminated this flow of contested land into the informal market. It is well beyond the scope of this study to determine how much slum land has been affected by such reservations, and the role reforms have played in reducing the expansion of slums over the period. We merely note that the *de minimus* expansion of the land area under slums has coincided with the reforms that stopped new regulatory takings.

<sup>19</sup> MHT SEWA has documented cases of legal reservations on land that slum dwellers currently occupy and bought informally from the legal owners. However the identification of government claims and reservations is a time consuming and expensive process involving visits to multiple offices and authorities, and must be conducted on a plot by plot basis. It took over 18 months with the help of a lawyer with real estate expertise to make an initial assessment of ownership issues and their relation to regulatory reservations for one plot.

Formal redevelopment of brownfield land is far more complicated and costly than the informal densification we have documented for slums. Figure IV.5 illustrates these complexities. The uniform and low maximum FSI of 1.8 in Ahmedabad greatly constrains how much incremental saleable floor space can be obtained through re-development, as much existing formal development is fairly close this level. The transaction costs and attendant uncertainties in passing through the formal process of redevelopment are too high to be covered by marginal increments to floor space. As a result, little redevelopment takes place, and this potential source of incremental housing is thereby greatly limited.

*Figure IV.5: Process for Brownfield Urban Redevelopment*



**Figure IV. 6: Built Up Density Profile in AMC 1991-2001**

Source: Alain Bertaud

Maximum FSI may be the most significant constraints in the favorable cases where ownership of the land is clear and title is uncontested.<sup>20</sup> However, for many of the plots even in developed urban areas, other constraints may also make it costly or risky to redevelop. Developed lands whose existing use was compromised at any point due to changes in zoning, reservations for green belts, low-cost housing, notified ULCRA reservations or failure to convert to urban use are likely to have been subject to grey market transactions that created competing ownership claims on the land. Anyone wishing to invest in major redevelopment would need to resolve these ownership disputes, which are notoriously slow to be adjudicated in the courts.

When property rights are compromised in this way, the risks to investors wishing to redevelop this land or improve the structures on the land are high—be they developers seeking to build high quality apartments or households wishing to get a mortgage to invest in a better home. The investment could be tied up in litigation amongst those claiming ownership rights. Construction finance or mortgages will be very difficult to obtain. These risks create a very adverse environment for investment to supply new housing.

<sup>20</sup> This discussion draws heavily on Bhatt and Patel (2010) “The Tenure Problem: What does it really mean?” Manuscript January 2010, and Bimal Patel, Rajendra Joshi, Shirley Ballaney and Matthias Nohn. 2010 “Slum Planning Schemes A Statutory Framework for Establishing Secure Tenure and Improving Living Conditions in Indian Slums” Manuscript August 2010.

The costs of clarifying ownership and cleaning up any outstanding regulatory reservations and obtaining rural urban conversion in resources, time and uncertainty in the process are often prohibitive, even if there is no corruption encountered along the way. As in the case of Greenfield development in Figure IV.3, various State and local departments must provide information and approvals once the ownership disputes are resolved. For low-income households, the burden is particularly heavy. For example, if, as is likely, their existing home is not up to the exacting standards of the GDCR (see below), **it must be demolished and a substantial fine (Rs. 13 lakh or Rs. 1.3 million) before applying for conversion to urban status.** These costs place further impediments in the way of building a modern high quality and affordable housing stock in Ahmedabad. The system is so complex and opaque that it would be extremely costly and time consuming just to assess the extent of land where ownership is compromised in this way. But casual observation, anecdotal evidence, and the premia paid for lands with clean title sold by AUDA strongly suggest that it is a significant part of the stock.

The high cost of regularizing ownership has blunted the effect of earlier land use reforms, and other developments such as increased availability of housing finance. While reservations such as ULCRA, the green belt and development restrictions are no longer placing new areas in limbo, the legacy of earlier measures remains because of the welter of competing claims created while these reservations were in place. Those lands will not be freed up to provide much needed housing until there is an expeditious and predictable mechanism to clean up competing claims to land tenure and allow grandfathering of structures that do not satisfy today's high building standards, but which do meet very basic standards for safety and health. Patel et alia (2010) have proposed a consensual mechanism as an alternative to formal litigation, much as TP schemes offer a consensual alternative to government land expropriation. The goal of such a mechanism would be similar to bankruptcy law—establishing rules for freeing up assets that would otherwise remain frozen due to prolonged disputes over competing claims. Even though all claimants don't get everything they might be able to claim, an expedited process allows legitimate claimants to get some fraction of their claim in relatively short order.

It has been argued that TP schemes work because they are underpinned by the basic principle of fairness and they offer flexibility to address competing claims in a transparent rules driven framework. They allow all landowners to give up something (unserviced land) for something more valuable (less land with good infrastructure). Likewise a consensual expedited tenure dispute resolution mechanism could allow all claimants to gain some share of the value of a plot with clean tenure today by giving up a claim to all the value that might only eventually be awarded to them years in the future after a prolonged legal process. **A reform offering a mechanism for unlocking land frozen in disputes and ambiguous ownership claims could dramatically accelerate the modernization of the real estate market and offer thousands of low-income households a chance to become legal homeowners and the autonomy to invest in their well being.**

Since administration of property rights to land is primarily the responsibility of the state, the form that such a reform would take depends on the legal and regulatory framework in each state. Moreover such a reform would have to be driven by the appetite in any given state for expedited solutions to disputes through consensual mechanisms and local preferences for dispute management. For these reasons, putting forward a single legal blueprint for reform is both premature and unrealistic, although Patel et alia (2010) sketch out the broad lines of what such a system *could* look like. What is essential today is to recognize the high social and economic cost of protracted urban land disputes and the scope for reducing them by providing expedited processes. Without a system such as this, many plots in urban areas cannot benefit from the

substantial investments for improvement and redevelopment that the market may dictate, but which the current ownership framework make highly risky and ineligible for formal financing.

### **Government Regulations Requiring Consumption of Land**

The discussion above describes government policies and procedures that make it difficult and costly to obtain land for development; this section discusses a set of regulations that force a high consumption of land per unit of floor space provided. What households want is living space—a roof over their head—not necessarily raw land. Having made land expensive, government also limits the ability to economize on land when producing housing space. These regulations all have acceptable goals. Typically, their rationale is based on quality of life considerations, privacy, local environment, preservation of views etc. However, especially in a fast growing economy which has difficulty expanding access to land or wishing to contain urban sprawl and a large low-income population, the effects are the opposite of what is intended. The key to the unintended effects lies in affordability. If, as is the case in Ahmedabad, only 50 percent of the population can afford a new formal home, much of the expansion of the housing stock takes place informally—where these regulations don't matter.

### **Maximum FSI**

Low uniform maximum FSI even in the city center forces more Greenfield development at the urban periphery—pushing the pressure for developable land into the periphery where the delays in rural urban land conversion make themselves felt. See Figure IV.6 showing that the density profile already flattened between 1991 and 2001<sup>21</sup>.

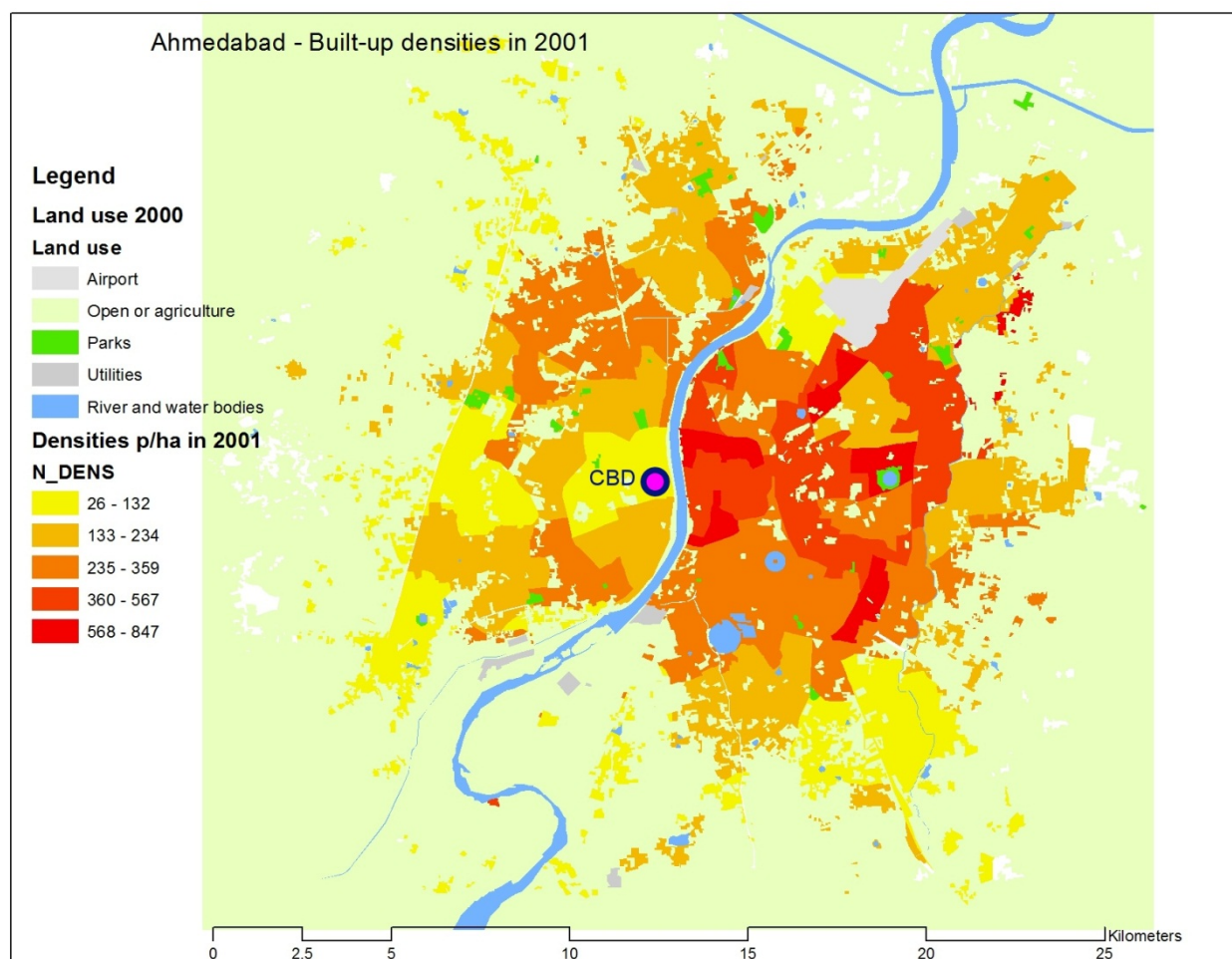
The practice, common in India, to impose a uniform maximum FSI to an entire city has many negative impacts. This practice forces the consumption of land in less desirable suburban areas and it decreases the area of floor space that can be built in areas where there is a high demand for high quality high density urban development. But not allowing higher maximum FSI in non-residential areas, it intensifies the competition between households and businesses for well-located land. While businesses may happily sacrifice a spacious, bucolic environment for an efficient well designed business centre, uniformly low maximum FSI forces them to consume open space they don't want or need. This drives up the price of open space everywhere, and raises the costs of these amenities to households. In aggregate low maximum FSI increases the land required for housing and commercial development, and drives up its price—thereby driving up the cost of any housing—since they all need land.

Beyond its substantial impacts on housing affordability, the current maximum FSI policy affects the structure of the city in undesirable and possibly unforeseen ways. Figure IV.7 shows for example that some of the lowest densities in the city are in the heart of the central business district (CBD) on the west side of the river. The modern service sector CBD that emerged in the 1980s along Ashram road around Nehru bridge is now anemic because the low FSI doesn't allow the construction of a modern CBD. Instead, small office and commercial centers are being built in suburban areas along ring roads and radial roads. By failing to distinguish between commercial and residential land, the current 1.8 FSI imposed on Ahmedabad contributes to dispersing commercial activities into distant suburbs. This dispersion of business and commercial activities will have consequences for the modernization of Ahmedabad's transport system.

---

<sup>21</sup> This analysis can be updated to 2011 once ward level population data are available from the 2011 census.

The current density of Ahmedabad (262 p/ha) is quite high by international standards. This density is not compatible with individual transport as the dominant transport mode. The minimum necessary road space required for parking and moving a car at 30 km/h would simply not be available when, say, 30% of trips will use an automobile. Mass transit will be a necessity for continued mobility in the city, and the AMC has already started the process through investments in the Bus Rapid Transit System (BRTS). But making the shift to mass transit will not be straightforward given the land use patterns now being established. Efficient transit systems require not only high densities but also concentration of trip destination. That requires CBDs that are dense in jobs and commercial activities. The uniform FSI prevents the formation of CBDs that could be the focal points of a modern mass transit network. The dispersion of jobs along suburban roads, which is the natural response to the current FSI regulations, will destroy the viability of a mass transit system. Annex 4 discusses some of the longer term unintended and undesirable consequences that may be created under the current regulatory framework for land use.

Figure IV.7: Ahmedabad Built Up Densities in 2001<sup>22</sup>

Source: Authors' calculations.

### General Development Control Regulations (GDCR)

The GDCR currently in place imposes a large number of different requirements on housing that raise costs and limit choices for households. Each regulation is put in for well-intentioned reasons—respecting boundaries with neighbors, providing open space, offering plenty of parking to avoid congested roads etc. **However, taken in their totality, these individual standards make housing more costly by requiring more land per unit of living space—and land is the most expensive input to housing.**

It is clear that the land use standards applicable in a number of illegal but now formalized and serviced subdivisions, provide living conditions that are quite acceptable or are even desirable for a large part of the population. We refer to this housing (see Figure IV.8 for examples) as vernacular housing. It makes up a substantial share of the existing housing stock, but it would now be illegal to build such housing because it does not meet all the GDCR regulations. The market price of pucca<sup>23</sup> housing found in such subdivision ranges from Rs 2 lakhs<sup>24</sup> to 12 lacks

<sup>22</sup> Once census data by ward for the AMC are available, this computation can be updated for 2011.

<sup>23</sup> Pucca refers to construction using durable materials like brick and cement rather than mud or straw, for example.



and above, depending upon location. This is to be compared to the Rs 8 lakhs and above found in new formal subdivisions adhering to the GDCR in more distant areas.

This vernacular housing, as can be seen in Figure IV.8c constitutes a pleasant, if modest living environment, and is in no sense, a squalid slum. Land use surveys have shown that the great majority of the population of Ahmedabad (about 80%) is currently living in settlements that use land in way that differs significantly from the minimum standards established by law. Figures IV.8a and b show drawings of actual developments following patterns very common in Ahmedabad based on Google Earth images. Figure IV.9a is a layout proposal for a new development following the current GDCR to build affordable housing. Table IV.4 shows some of the key indicators for the three types of development.

**Table IV. 4 Key Indicators for Vernacular and GDCR housing**

	Vernacular Narol Naroda Rd.	GDCR Model	Modified GDCR
Persons per Hectare	1958	1991	4200
Average Living Space per Person	7.7 m <sup>2</sup>	5.2 m <sup>2</sup>	5.2 m <sup>2</sup>
Ratio of Vernacular to Others Living space per person		1.49	1.49
Ground Coverage	75%	45%	55%

Table IV. 4 shows that one of the important cost drivers in the GCDR is the low maximum ground coverage in relation to vernacular neighborhoods. Units adhering to the GCDR are not necessarily larger, however. Units may actually be smaller in lower end formal developments than in vernacular homes. Also it is worth noting that low ground coverage limits in the land use regulations do NOT necessarily reduce the density of persons per hectare. Density is roughly the same between the GDCR model and the vernacular developments we compare. **Broadly speaking, this means that for the same density, residents of vernacular neighborhoods can get roughly 50 percent more housing space using the same piece of land. The essential difference between these two is in ground coverage not density.**

The modified model in the last column of Table IV.4 shows the limitations of marginal changes to the regulations while staying within the same basic development type—four story walk ups with low ground coverage. As shown in Table IV.5, this approach seeks to economize on land by reducing parking and space between buildings while respecting setback rules for front and side margins, and marginally increasing plot coverage. This alternative model may still be acceptable to lower income households that don't own cars, and can reduce unit costs substantially by building more units per hectare, as Table IV.6 shows—especially in well located neighborhoods where land costs are high<sup>25</sup>. However, keeping plot coverage low comes at the cost of higher density, which may be a concern.

The most important lesson from these examples is, however, that the multiple requirements for parking, setbacks, and limits on ground coverage have made low-cost, low rise vernacular housing illegal—thus eliminating the option to substitute costly open areas for a larger living

<sup>24</sup> 1 lakh is Rs. 100,000 or roughly US\$2000 at prevailing exchange rates at the time of writing.

<sup>25</sup> The example used here was based on a land cost for a relatively low-cost land parcel distant from the city center. However as shown in the table, when land prices are higher, the impact of the regulations on cost are greater—as are the overall costs of the home. With the current rapid rise in land prices, homes designed and built to sell for 4 lakhs would now have a price closer to 8-10 lakhs, so the goal of a 4 lakh home is rapidly becoming infeasible.



space and the amenities of low rise living. ‘Affordable’ formal housing is now required to be in cramped apartment living—most likely an unintended, but still very real consequence of the multiple design standards in the GCDR.

The AMC’s large stock of well laid out vernacular housing fortunately offers good affordable housing options in the city. **But this stock cannot now expand legally. This cuts off a path to meeting the needs of the large population of low and middle income households with growing purchase power.** The GCDR sets standards that are really only suited to the highest income households. For example, the GCDR requires all formal apartments to build a parking space---whereas automobile ownership in Ahmedabad is 12 vehicles per 1000 population<sup>26</sup>, below the average for India of 15 automobiles per thousand persons in 2006, where India is ranked 127 out of 138 countries for car ownership.<sup>27</sup>

The large gap that has been introduced between this more modest standard of legacy urban development and new formal housing not only raises the costs of new Greenfield development. As discussed above, the high GCDR standards raise the costs of regularizing and redeveloping existing urban development for a very large share of the housing stock. Full regularization of tenure requires demolition of illegal structures and redevelopment according to the costly GCDR standards—and most likely a reduction in living space.

---

<sup>26</sup> <http://www.ourcitiesourselves.org/exhibition/city/ahmedabad> referenced on November 18, 2011

<sup>27</sup> World Bank Development Indicators referenced 11 August 2011. Data is for 2006. Includes commercial vehicles, automobiles, vans and SUVs but excludes motorcycles and other two wheelers.

**Figure IV.8a. Existing Formal Housing that would be Illegal for New Construction under the GCDR**

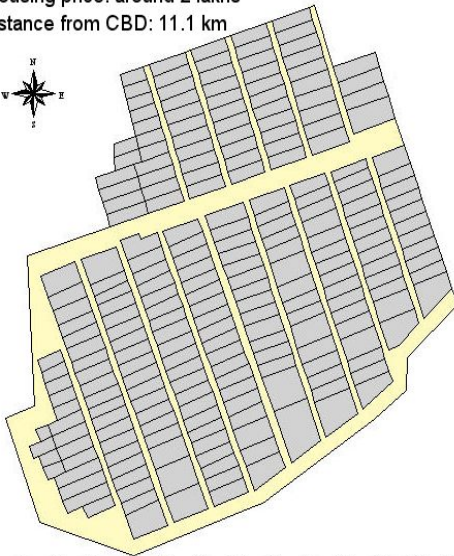
**Low income development  
along Sardar Patel Ring Road**

lat: 23.017506

long: 72.671711

Housing price: around 2 lakhs

distance from CBD: 11.1 km



Number of dwelling 1 level	229
person per household	4.5
Total population	1031
Number of households	229
Average population density	905 person/Ha
Average dwelling size	37 m <sup>2</sup>
Average floor area per person	8.2 m <sup>2</sup>
Total dwellings area 1 level (m <sup>2</sup> )	8,438 74%
Total street area (m <sup>2</sup> )	2,954 26%
Total settlement area (m <sup>2</sup> )	11,392 100%

**Middle income development  
along Narol Naroda Road**

lat: 23.032800

long: 72.640567

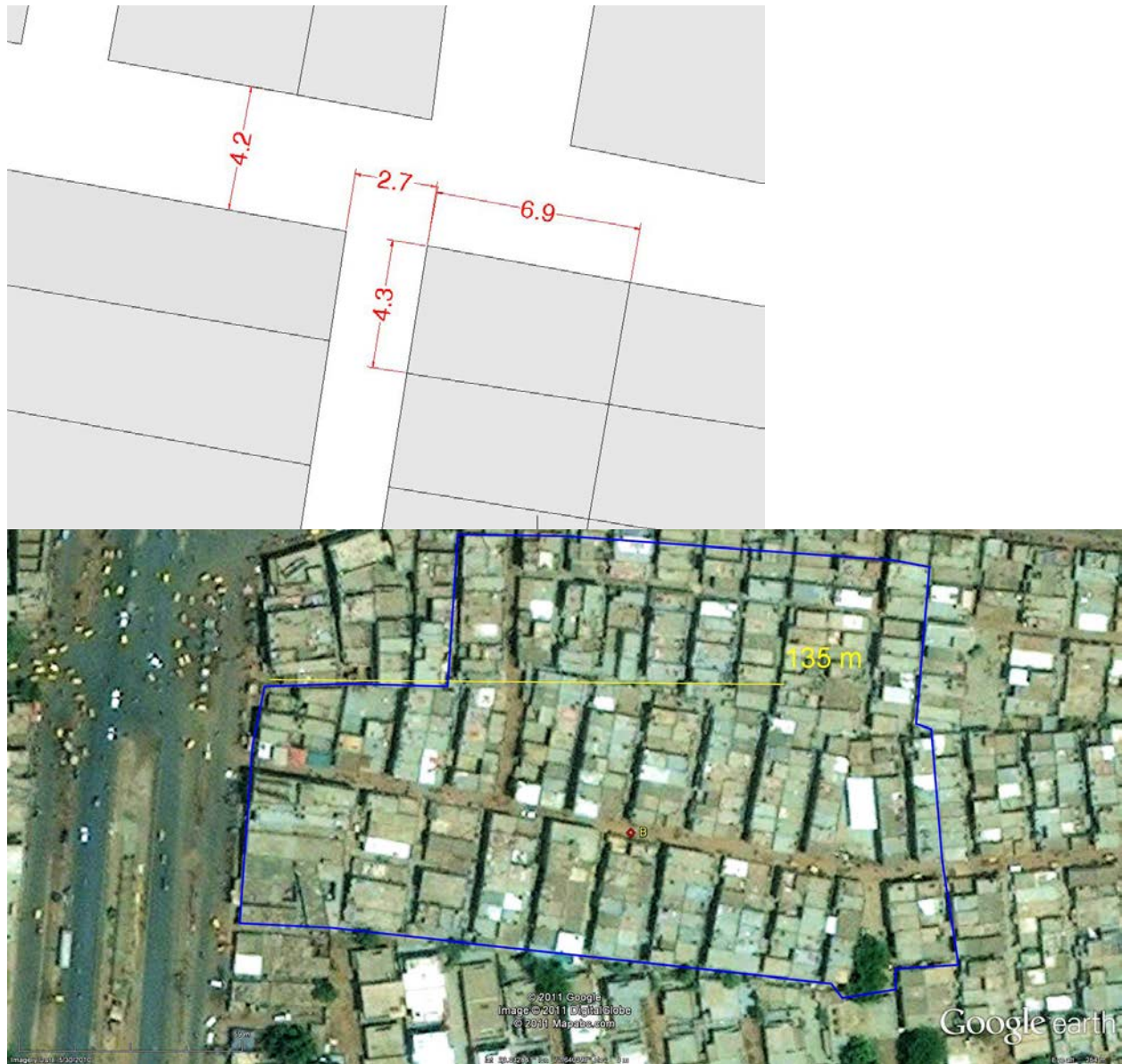
Housing prices: from 4 to 12 lakhs

Distance from CBD: 7.9 km



Number of dwelling 2 levels	385
persons per household	4.5
Total population	3465
Number of households	770
Average population density	1958 person/Ha
Average dwelling size	34.60 m <sup>2</sup>
Average floor area per person	7.69 m <sup>2</sup>
Total dwellings area 2 levels (m <sup>2</sup> )	13,320 75.28%
Total street area (m <sup>2</sup> )	4,374 24.72%
Total settlement area (m <sup>2</sup> )	17,694 100.00%

**Figure IV.8b. Existing Formal Housing that would be Illegal for New Construction under the GCDR**





*Figure IV.8c. Existing Formal Housing that would be Illegal for New Construction under the GCDR*



Figure IV. 9a. Possible Plot Layout according to GCDR



Source: Environmental Policy Collaborative and SEWA Mahila Housing Trust

Figure IV.9b. Plot Layout with modifications to GCDR



<b>F.S.I</b>	<b>=2.36</b>
<b>PARKING+CCOP</b>	<b>=36%</b>
<b>DISTANCE BWN 2 BLD</b>	<b>=7'6"</b>
<b>CORRIDOOR</b>	<b>=3'</b>
<b>SAIRCASE</b>	<b>=3'</b>
<b>GROUND COVERAGE</b>	<b>=54%</b>

Source: Environmental Policy Collaborative and SEWA Mahila Housing Trust

**Table IV.5 Comparison of Key Specifications for GDCR and Modified GCDR Specification for More Affordable Housing**

<b>BYLAWS</b>	<b>DESIGN AS PER GDCR</b>	<b>DESIGN WITHOUT GDCR</b>
PARKING	25%	N.P
COP	10%	N.P
DISTANCE BETWEEN TWO BUILDINGS	MIN.15' 0"	MIN. 7' 6"
STAIRCASE WIDTH	MIN.4' 0"	2' 9"
CORRIDOR WIDTH	5' 0"	N/A
GROUND COVERAGE	45%	55%
FRONT MARGIN	15 FT.	15 FT.
SIDE MARGIN	MIN. 10' 0"	MIN. 10' 0"
FSI	1.2	2.36
ROAD WIDTH	MIN. 25' 0"	12' 0"
HEIGHT OF BUILDING	(G+2) 30' 0"	(G + 4) 45' 0"
LENGTH OF BUILDING	MAX 450 FT.	MAX 450 FT.

**Source: Environmental Policy Collaborative and SEWA Mahila Housing Trust**

Note that these specifications respect all perimeters with respect to neighboring plots, such as side and front margins.



Table IV.6 Cost Comparison with marginal flexibility in the GCDR

DESCRIPTION	AS PER GDCR	AS PER REVISED GDCR (G+4)
PLOT AREA sq ft	81681	81681
NO OF UNITS	330	710
CARPET AREA sq ft	250	250
BUILT UP AREA sq ft	336	305
LAND COST in Rs.M. (plot 11km from CBD in undeveloped area)	40,000,000	40,000,000
NO OF FLOORS	G+2	G+4
TOTAL BUILT UP AREA (SQ.FT.)	110250	223440
LAND COST PER SQ FT CARPET AREA	485	225
CONST COST per sq ft.	800	800
LAND COST PER UNIT	121212	56338
CONSTRUCTION COST PER UNIT	268800	244000
<b>TOTAL COST PER UNIT Rs.</b>	<b>390012</b>	<b>300338</b>
<b>SAVINGS W/ REVISED MODEL PER UNIT</b>		<b>23%</b>
<b>LAND PRICE 5 X HIGHER</b>		<b>40%</b>
<b>LAND PRICE 10 X HIGHER</b>		<b>45%</b>

To address the affordability problem of the majority of lower income households in Ahmedabad, it would make sense to study the land use standards that have been used by various developers in the past and select and adapt the types of layout that are more attractive from environmental and economic criteria. These models could become allowable under an expanded GDCR that offers different models of building by-laws in different parts of the city. Obviously, the type of layout to be recommended for legalization in a central location would differ from layouts adapted to suburban locations. The current legal land use standards are very rigid, and are ill adapted to high land prices. By contrast, many vernacular subdivisions built under more flexible regulations have been refined over time as developers respond to consumer tastes and preferences. By surveying the land use of these older subdivisions and the environmental satisfaction of its inhabitants, it would be possible to develop standards that are more anchored in the urban culture of Ahmedabad and less prisoner of abstract international norms of good housing standards. **A policy of land use regulations that make legal formal housing unaffordable to about 40% of the population of Ahmedabad must be reconsidered. Our review of the housing stock in Ahmedabad suggests that good home grown alternatives exist and deserve a place amongst models allowed in the GDCR.**

## V. Immediate Improvements

Clearly there is much to do to reduce the pressures in Ahmedabad's real estate market. Serviced land that has permissions and title sufficient to make the substantial investments required to build good quality housing is in short supply. Converting existing built space to higher intensity land use with more surface area and good quality housing is either prevented due to maximum FSI regulations or it is too costly and risky to do because of the many procedures at the state and local level involved. At the same time, the building by laws require more expensive land than most of the legacy middle class housing stock so new formal housing is beyond the reach of most households—in spite of growing prosperity. Informal housing solutions have been meeting much of the new housing demand, largely by densification of existing slums, gamtals, and the old city. New formal housing is further and further away from the city center, which imposes important transport costs.

Reversing this dynamic of tightly constrained and high cost new housing supply will require many important changes—not just stroke of the pen reforms—but also changes in the role that government plays in land markets, changes in procedures, institutional mandates, coordination across agencies, and eventually new procedures for expediting some of the bottlenecks in the land system. Thinking through how to effect these changes should start right now. Otherwise it will not be possible to keep pace with the dynamic economy and informal housing solutions will continue to proliferate in the face of growing prosperity. However even with rapid progress in these areas, the need for very low-cost housing will remain.

Today, because basic environmental infrastructure services in most informal areas (slums and challis) are substandard. Opting for modest low-cost housing affordable for low-income groups, consigns them to living in squalid neighborhoods. The SNP has shown that this situation can be turned around. **The linchpin of an affordable housing policy should be to raise the minimum standards of even the lowest cost housing by providing neighborhood upgrading to all slums and unserviced challis and gamtals. Such a program would ensure that the basic entry level housing available in Ahmedabad would offer even the most modest income groups decent homes.** Once neighborhood infrastructure is upgraded, poor households have shown that they can improve and expand their own homes on their own initiative and to a very great extent with their own resources, and eventually even leave slums to live in low-cost formal housing. Without these basic environmental improvements, however, there is no base upon which an enterprising household can build.

Government can do a great deal for the populations of these low quality informal areas by investing in them—**by providing the network services and neighborhood improvements that individual households cannot.** Making these investments a high investment priority can do much more for improving living conditions in the city, and can do so far more effectively, than relying upon building public housing in increasingly far flung areas that are not suited to most residents of slums and challis.

In this study, we have prepared a preliminary mapping all slum, chawl, and gamtal areas, as shown in Figure III.4. Our rough estimate of the population of the slums and chawl areas is 1.88 million persons, or 422,000 households<sup>28</sup>. We have estimated the costs of the basic package of providing the neighborhood upgradation services to these slum and chawl households, based on experience with the Slum Networking Program (SNP) and updated to reflect today's market costs. These costs include project management, community organization and a full complement of seven key services in all neighborhoods: in house toilets, in house water connections, sewer connections, road paving, drainage, garbage collection, and street lighting. These costs amount to Rs. 56,000 per household in today's prices. Table V. 1 summarizes the full costs of the program if executed over a five year period<sup>29</sup>. This table shows a program phased over five years. If the implementation period could be reduced to three years, costs could be reduced by about 11 percent, because of lower cost escalation in the current environment of moderate inflation estimated here for simplicity at 9 percent per annum, a relatively conservative figure. **We note that the current costs for civil works have been estimated on the basis of market prices for labor and building materials, not the standard rates often used for estimation purposes in government, which often cannot be achieved and may lead to underestimates of costs and insufficient budget provisions.** These costs are estimated conservatively, assuming that all slum and chawl household would need the full upgradation complement. To the extent that households may have already gotten these services, they may be lower. For example, if as some believe, up to 60 percent of all households already have in house water and toilet facilities, the total cost of the program would decline by about 40 percent to Rs. 1800 crore or \$360 million.

**Table V. 1. Summary of Total Costs of Upgradation in Ahmedabad**

**Ahmedabad: Slum and Chawl Upgrading - Implementation Plan**

**Summary of Program Cost**

**Data**

Households to be upgraded 400000

**Key Assumptions**

Option=	1	Year 1	Year 2	Year 3	Year 4	Year 5
1 - 5 Year		10	15	25	25	25
2- 3 Year		25	40	35		
Inflation % p.a.		9	9	9	9	9

**Summary of Cost of SUP Program**

Item	Initiation	Year 1	Year 2	Year 3	Year 4	Year 5	Total	Rs. in Crores
Households upgraded		40,000	60,000	100,000	100,000	100,000	400,000	
Management Structure		0.05	0.78	0.86	0.93	1.02	1.11	4.75
Project Preparation % of Civil Cost	1	2.05	3.35	6.09	6.63	7.23		25.35
Project management % of Civil Cost	2.5		5.12	8.38	15.22	16.59	18.08	63.38
Survey, Household Data, Community Consultation & Design			31.39	51.33	93.24	101.63	110.78	388.37
Civil Works		204.92	335.04	608.66	663.44	723.15		2535.22
<b>Total</b>		<b>2.10</b>	<b>245.57</b>	<b>401.69</b>	<b>724.69</b>	<b>789.91</b>	<b>853.12</b>	<b>3017.08</b>

Source: Authors' calculations NB. Rs. 1 crore is equal to roughly \$ 200,000. Rs. 3000 crore is roughly equal to \$600 million

<sup>28</sup> The average household size is assumed to be 4.7 persons based on recent sample surveys of slums. Many gamtals have good services, or are in the process of upgradation. We have left them out of this initial estimate. If the city takes on a strategy of providing services for all as advocated in this paper, a more detailed survey and assessment would be needed. We understand that CEPT has started work on such a survey for slums.

<sup>29</sup> Please see Annex 3 for details of the costing exercise and assumptions.

**Table V.2 Per Household Upgrading Costs**

<b>Per Household Cost</b>	<b>2011/12 Prices</b>	
Management Structure		90
Project Preparation % of Civil Cost	1	470
Project management % of Civil Cost	2.5	1,175
Survey, Household Data		7,200
Community Consultation & Design		
Civil Works		47,000
<b>TOTAL</b>		<b>55,935</b>
	<b>Approx.</b>	<b>56,000</b>

Source: Authors' calculations

### Impact on the Budget of the AMC

**Table V. 3 AMC Budget 2008-09 through 2011-2012**

	all figures in Rupees Thousands			
	2008-09	2009-10	2010-11	2011-12
	FINAL	FINAL	REVISED	APPROVED BY AMC
<b>Total Capital Income</b>	<b>8,762,959</b>	<b>10,365,515</b>	<b>17,762,152</b>	<b>28,607,000</b>
<b>Total Capital Expenditure</b>	<b>10,311,889</b>	<b>12,950,453</b>	<b>17,762,152</b>	<b>28,607,000</b>
<b>Total Revenue Income</b>	<b>15,541,668.00</b>	<b>16,169,373.00</b>	<b>22,353,514.00</b>	<b>31,975,350</b>
<b>Total Revenue Expenditure</b>	<b>9,104,426.00</b>	<b>11,559,960.00</b>	<b>13,494,597</b>	<b>17,903,008</b>
<b>Total INCOME(CAPITAL+REVENUE)</b>	<b>24,304,627</b>	<b>26,534,888</b>	<b>40,115,666</b>	<b>60,582,350</b>
<b>Total EXPENDITURE(CAPITAL+REVENUE)</b>	<b>19,416,315</b>	<b>24,510,413</b>	<b>31,256,749</b>	<b>46,510,008</b>

Source: Published budgets of the AMC and authors' calculations

The Average Municipal Budget of Ahmedabad for Capital Expenditures has been around Rs. 1300 crores in the last 3 years (2008-2011). This provides an indication of their current capacity to undertake large infrastructure improvement projects.<sup>30</sup> The capital budget in 2011-12 is more than twice the average, reflecting very rapid capital budget growth over the last three years. The annualized project cost of the five year program is Rs. 603 crores which represents 21 percent of the 2011-12 capital budget, which seems a clearly manageable figure. The corresponding figures for the three year program are Rs. 895 crores and 31 percent respectively. There are clear advantages to setting an ambitious goal of completing the program in three years, but this could be a stretch for the AMC. It is up to them to assess whether this represents too much of a stretch for a rapidly growing budget. The five year implementation option appears quite manageable. As for the operations and management budget, experience from the SNP suggests that, since newly connected households pay into the network whereas they did not before, the program should not be a drain on the operating budget. This should be assessed in more detail.

<sup>30</sup> \*This does not include capital expenditure towards the Sabarmati Riverfront Development Project, since it is set up as an SPV and is funded through a loan from HUDCO. However, the AMC budget does include expenses for BRTS project related infrastructure improvements and bus procurements. The BRTS is operated by Ahmedabad Janmarg Limited which is also an SPV

## **Upgrading Network Infrastructure**

The costs discussed so far are essentially on-site local costs. Traditionally, in India, slum upgradation projects have been limited to this kind of investment. This approach neglects two implications for infrastructure networks.

First, once every household will have an individual water connection and an individual WC might substantially increase the demand for such services as compared to the present levels of service delivery. The trunk or primary infrastructure network may not have the capacity to cope with the demand for services at the assumed standards.

Second, Ahmedabad, much like most other Indian cities, would benefit greatly from an overall upgradation and capacity augmentation of its network infrastructure, especially water, drainage, and sewerage. It has been the tradition in India's cities to get by with the bare minimum of basic services of this kind and cope with the concomitant service failures as a routine of doing business. While most households have come to expect water only a few hours per day—experience with pilots in Karnataka have shown that moving to 24X7 water is achievable, popular and people are willing to pay for it. AMC and Gujarat have shown the way to throwing over tradition and modernizing many areas of city management. A city-wide project to provide neighborhood improvements to all its informal areas is an excellent opportunity also to take a truly inclusive approach, and upgrade networks so that all residents of the AMC experience service improvements—not just those in slums and chawls---as part of the program.

It would therefore be useful to assess the network capacities and plan for their augmentation concomitant with the slum-upgrading program. However quantification of cost of network augmentation has not been attempted here. Based on the above, it can be seen that AMC is already undertaking initiatives to improve trunk infrastructure and access to the services. About 73 crores have been allocated in the most recent budget for upgrading existing networks. Details are available in Annex 3. It is fortunate that the Corporation has already started such improvements, and is thus gaining experience and capacity with such network infrastructure upgrades. This experience could provide the basis for scaling up these efforts to the city level.

## **Providing Relocation for Households Whose Shelter Cannot Be Upgraded in Situ**

It is common for traditional slum upgradation plans to ignore some of the most vulnerable households in the city—those for which in situ upgradation is not a good option. In the AMC, we have identified two types of households of this kind—those in flood prone areas around lakes and sidewalk dwellers. For the sidewalk dwellers, options range from homeless shelters to public housing, depending on their permanence in the city and capacity to live independently. In Ahmedabad, our estimates suggest that the pavement dweller population is fortunately relatively limited. More study is needed to determine how best to meet the needs of this population, and find effective solutions to improve their living conditions. Standard approaches such as night shelters have not met the needs of all the population.

**Table V. 4 Estimates of Populations Unsuitable for In-Situ Upgradation****Households Potentially Unviable for Upgradation**

	<b>Unsuitable for Upgradation</b>	<b>Area (Ha)</b>	<b># of Households</b>
1	Pavement Dwellers	-	3,406
2	Flood Prone Areas	2.31	577
3	<b>Infrastructure Upgrades</b>	<b>6</b>	<b>1,500</b>

**Flood Prone Households in Slums Near Lakes**

<b>Lake name</b>		<b># of Households</b>
Chandola lake	Total Population	3,930
	Relocation HH	442
Thaltej lake	Slum Pocket	1,369
	Relocation HH	101
Isanpur lake	Slum Pocket	1,255
	Relocation HH	34
TOTAL		6,554
TOTAL After Lake Protection		577

Slum and chawl households in the path of important infrastructure development (e.g. new roads or widening of existing roads identified in the development plan) may be better served by relocation than upgradation, because their future in situ is uncertain. However, not all road projects come to fruition as planned, and the land cleared by relocation for infrastructure improvement is prone to further encroachment until the proposed infrastructure improvement is completed. This implementation timeline for such infrastructure projects is not always assured as it depends on various factors like availability of appropriate funding etc. It makes no sense to relocate households until such funding is available. Furthermore, the relocation of any households displaced by the infrastructure should be paid for as part of the project costs.

Accordingly, while noting the presence of this set of households, their relocation is not included as part of the project costs. Assuming full cost of relocation within the cost of major infrastructure projects with high economic value has become increasingly accepted through, among others, experience with IFIs that developed working models for rehabilitation of all affected households. The MMRDA in Mumbai, for example, subsequent to a World Bank urban transport project, has adopted R&R guidelines using community involvement to avoid abusive inclusion in rehabilitation schemes, NGOs that are trusted intermediaries, and abolishing punitive cut off dates for providing compensation to affected households. AMC and AUDA certainly have the capacity take up such a forward looking approach to rehabilitation in their own infrastructure projects.

The households around the lakes offer a different set of considerations. Since the lake is prone to periodic flooding, it is often assumed that these households should merely be relocated, and the lake infrastructure upgraded as a separate matter. However, experience suggests that it usually makes much more financial sense to reinforce the lakeside infrastructure to reduce flooding and improve these slum neighborhoods in situ to avoid dislocation. According to our rough estimates, less than 10 percent of households would need to be relocated if infrastructure investments are made. One hopes that working with the community, as was the case under the SNP, this number could be reduced even further. This offers a substantial savings—if all lakeside households are relocated, this would add 150 percent to the current estimate of relocation costs city-wide. This incremental sum of Rs. 300-600 crores that could be saved by making the necessary infrastructure investments is quite substantial—representing from 10-20 percent of total project costs.

### **Program Implementation Building from Experience with SNP: Scaling Up by Design**

#### **Positive Lessons from SNP**

The Slum Networking Program was started in the mid-1990, and continued for about 10 years. During that time, services were provided to about 14,000 households very cost effectively and made major changes in the neighborhoods of many of the city's slum pockets—as can be seen in Figure V.1. The homes in these slum pockets, once provided with decent neighborhood infrastructure, greatly increase in value due to the amenities in the environment, and bring households within sight of moving up to middle class housing such as that shown in Figure V. 2 below. A number of lessons were learned in the process and these offer invaluable insights for the design of city scale program.



**Figure V.1 Before and After Slum Networking in Ahmedabad**



**Figure V. 2 Typical Lower Middle Class Housing in Ahmedabad**



There are several important, highly positive lessons learned in the SNP:

- The AMC piloted a collaborative model for working with communities and NGOs that has held up over many years and different municipal commissioners, **showing that it is possible to institutionalize different ways of doing business rather than relying on a single charismatic leader to achieve lasting results.**
- **This project flourished without external funding**, whether from the central ministries or IFIs. It was a homegrown initiative of the AMC adapted to local capabilities and interests.
- **Households in slums are willing to pay** for neighborhood upgradation and in house service delivery. Communities contributed 10 percent of project costs for the SNP—and this contribution rate could have been double that. Prior to the program, individual households were paying much more for illegal individual water and sewer connections than the household contribution for the entire upgrading package.
- Once upgrading is completed, **households invest multiples of what the government provides** to improve the quality of their homes and build additional floors. Many add extra rental units to their homes, one of the best sources of low-cost rental housing.
- **Community involvement contributed greatly to smooth and efficient execution of the upgrading program.**
  - In most neighborhoods, the CBOs reworked plans to minimize or avoid altogether relocations of entire households.
  - The households themselves performed required demolitions to avoid conflicts with city authorities and contractors.
  - The community supervised the quality of the works and it was only upon community agreement as to the quality of work that final payments were made to contractors.
  - Storage of building materials on-site reduced pilferage and wastage.
  - CBOs formed during the construction period have taken on operations and maintenance of the facilities effectively.

### **Avoiding Avoidable Constraints**

The SNP did face limitations. The tripartite partnership including the private sector proved quite difficult to sustain. The reasons for this are complex. Clearly, attempting to marry the cultures of two distinct organizations in the implementation of a single project proved cumbersome, slow and frustrating to all partners, and was abandoned. Fortunately, the program survived the withdrawal of the private partner. Future programs should be streamlined and simplified to avoid excessive interdependencies, and instead find a responsible division of labor among the different parties involved. This is what worked successfully in SNP.

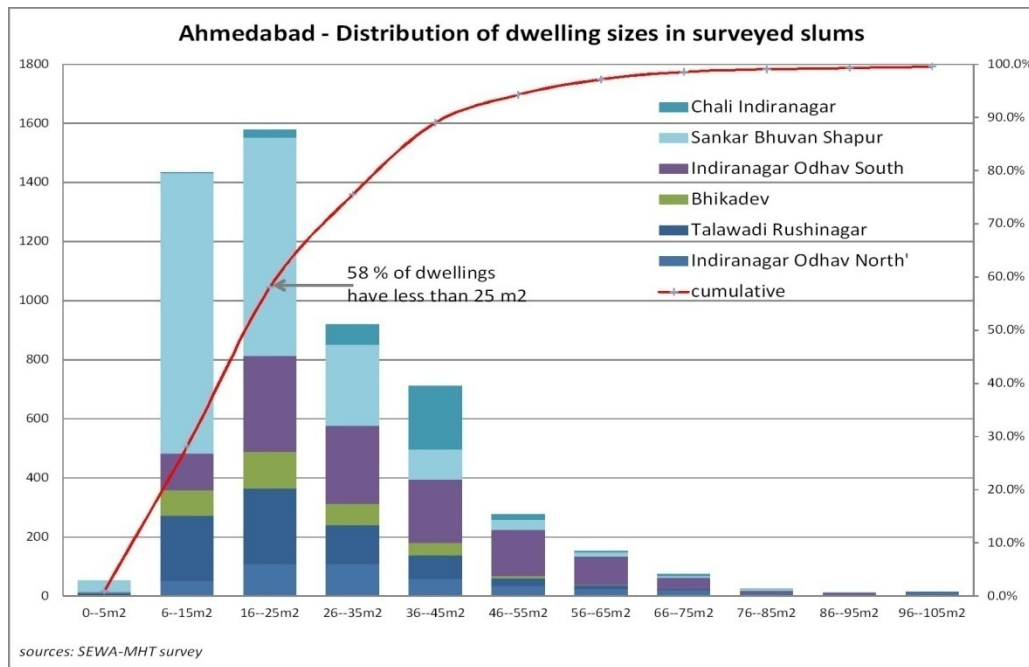
In recent years, attention has shifted away from the SNP to much more costly formal ‘affordable housing’ projects supported under JNNURM, and strongly subsidized by the center. As discussed in section 2, there will be substantial demands for such housing from households who do not now live in slums. Moreover, the number of households living in slums is a very large multiple of even accelerated public housing production. If the center is providing such rich subsidies for this housing, then the State and the Corporation may not wish to refuse them. But the availability of these subsidies should not distract the State and the AMC from their own homegrown initiative, the SNP—which offers a cost effective and scalable path to well located, decent and dignified housing—for the over 400,000 households in slums and chawls.

The center will not be in a position to provide subsidies for more than a fraction of the needs. Annez et alia (2010) estimate that it could cost 20-30 percent of GDP to build new housing for all households living in India’s slums today—not to mention accommodating the growth of this population (18 percent over the last ten years in Ahmedabad) . With the rural employment program NREGA funded at roughly 1-2 percent of GDP per annum, it is unrealistic to expect that multiples of that sum will be spent on subsidies for cities. Even if the massive funding required were available, it will also become increasingly difficult to find land for new housing projects as government land expropriation is coming up against political and social limits and market forces make it very difficult to enforce reservations for low-cost housing in private developments (Deusker 2011 and CEPT 2009). The further out low-cost housing moves, the greater the risk that this housing will either lie empty or will only be taken up by the well-off who can afford the time and cost of a long commute. *In situ* upgradation, on the other hand, improves living conditions where the poor live and work already. Finally, a city like Ahmedabad that is modernizing quickly and rapidly expanding its infrastructure may find that relocation housing for households displaced by new infrastructure projects may well absorb all its capacity to provide public housing.

Recent experience in Mumbai with the in situ slum rehabilitation program has created the hope that instead of upgrading slums, these neighborhoods can all be redeveloped into private apartments by private developers at no cost to the budget. Annez et alia (2010) illustrate the limits of such a program for Mumbai. Given the large population living in slums in relation to demands for new built space, it would take a generation to provide housing for its entire slum population. A few will benefit, but most lose out because such programs detract attention from simple and cost effective investments in slum upgrading. In Ahmedabad, our analysis of a sample of slum pockets turns up further constraints limiting the scope for Slum Rehabilitation Schemes. Figure V.3 illustrates one potential but powerful physical constraint. Plot sizes vary considerably in slums as the graph below shows. Many of those dwellings are quite small. This leads to high densities, which our data suggest are growing. When the slum pockets themselves are small, the ability to house all families already on site, while profitably redeveloping the remaining land for other purposes is quite limited. The requirement to offer a 250 sq ft (carpet area) apartment to all households also poses some challenges. Would the households with larger size dwellings, which are not the majority, but still a substantial number, accept a standard apartment in exchange for a larger dwelling? Would all parties accept that large numbers of

households with smaller dwellings—in this sample, 58 percent of the total get a valuable, larger apartment? Many slum pockets are so small that transit housing cannot be built on site, and developers are balking at the costs of renting transit housing—so residents risk being displaced and unhoused for the entire construction period. These points speak to the simple impracticality of executing the schemes on any scale. Our rough assessment is that no more than about 10 percent of slums could reasonably be expected to be rehabilitated in this way. Counting on this scheme to be more than a small part of a broader strategy for slums and chawls would be unrealistic.

**Figure V.3 Distribution by Dwelling Size in Sample Slum Pockets**



Source : Authors' calculations

While taking up whatever subsidies the center provides and trying to exploit the opportunity that Slum Rehabilitation offers, AMC certainly has the capacity, technical and financial, to execute a large scale slum and chawl upgradation program at the same time. **AMC and the State of Gujarat need not make an 'either or' choice. They could and should do both, and in this, there will be help from the center with the RAY scheme. To avoid creating perverse incentives to hold out for larger subsidies, government should send a clear signal that opting for neighborhood upgradation will not compromise eligibility for slum rehabilitation or allocation of subsidized EWS housing.** The risks of duplication are small and can be managed. Government should also avoid trying to plan which neighborhoods would get new housing, upgradation, and in situ rehabilitation. Developers need to make a market driven choice for rehabilitation. Government could focus providing public housing for orderly relocation when absolutely necessary for infrastructure. This conservative approach will naturally avoid duplication, while trying to plan all these choices from above will delay benefits for thousands of families willing to pay to improve their lives.

## Lessons for Moving to Scale: Creating Momentum with Robust and Reliable Procedures

Those implementing the SNP found that the pace of community organization and community financial contributions followed a simple, compelling logic. **Seeing is believing.** Once one slum had been upgraded, CBOs formed more quickly in neighboring areas. Communities made their cost contributions readily once they saw work crews in the neighborhood. Tangible results offer more credibility than the most finely crafted incentive schemes or communications strategies.

This suggests the following measures for accelerating the pace of a reinvigorated upgradation program in Ahmedabad. The proposed measures could reduce the time needed to improve one neighborhood from 24 to 15 months.

- Start working in priority neighborhoods quickly to demonstrate commitment to the program rather than mapping a process for the entire city up front. Working neighborhood by neighborhood offers natural project risk management. Any mistakes made in early upgradation projects can be corrected in later projects. Gains from learning on the job can easily be applied in later neighborhood upgradations.

**Unlike large projects with major interdependencies across different components, such as a metro or airport, neighborhood upgrading does not need intricate advance planning, or socio economic surveys of the entire population living in sub-standard neighborhoods.** The overall cost and financing envelope should be understood with some accuracy to ensure that project can be sustained to completion. The basic principles of beneficiary contributions and responsibilities as well as commitments from the government should be understood up front. But beyond that, it is unlikely that detailed project planning is worth the cost of the delays inherent in obtaining more precise knowledge. Informal housing in slums, chawls and pavements is the solution when all else fails. These solutions are inherently dynamic and subject to rapid change. Precise advance engineering of city-wide solutions for populations such as these is an illusion—and a very costly one for the households in these areas who remain chronically underserved while the global problem is studied in unnecessary detail. Neighborhood by neighborhood, these questions should be studied as upgradation subprojects are prepared and implemented. Initial conditions need to be documented and frameworks for assessing the impact of the project after completion should be put in place. Full station surveys and detailed engineering designs are required. But the frame of reference for such study is a neighborhood to be improved in the near future—not the city level. Thus all this important information for policy makers and program designers eventually can emerge during execution, rather than in a prolonged planning stage.

- **On tenure and security—the perfect should not be in the way of the good.** The scope of neighborhood upgrading should be expanded by setting aside the contentious question of tenure, No Objection Certificates (NOCs) or no eviction guarantees—**prior to upgrading the neighborhood.** The SNP included a 10 year no eviction guarantee. This guarantee could only be offered easily on lands owned by the AMC, and thus excluded slums on any other public lands. Unfortunately, even for those limited cases, the AMC was not always able to live up to the guarantee because new infrastructure projects necessitated some relocations in upgraded neighborhoods. Due to subsequent lawsuits and complaints, this guarantee has become controversial. The AMC may be understandably concerned about using it further. Using a no eviction guarantee precluded any upgradation in neighborhoods on public lands owned by other entities such as the State, the center and government enterprises like the railways. Private land

ownership ambiguities also make upgrading the chawl areas quite sensitive and problematic if a no eviction guarantee is provided. Together these limitations exclude a very significant share of underserved informal neighborhoods, thus compromising the objective of providing decent living conditions for all. On the other hand, given the experience with the SNP and the no eviction guarantee, households have understood that they are both unlikely to be evicted for no reason, and, *de facto*, a no-eviction guarantee may not provide full protection. We believe, based on experience in the later phases of the SNP, that many households will accept to pay their contribution even if they are required to recognize formally that they could be evicted—provided neighborhood upgrading is forthcoming.

- The AMC has had little success in its efforts at obtaining NOCs from central agencies like the railways to make any kind of improvement in slums on central lands. The Ministry of Housing and Poverty Alleviation (HUPA) in Government of India (GOI) should support the AMC and other local governments in obtaining such NOCs as part of its national slum upgrading program RAY<sup>31</sup>.
- Build on the AMC approach to providing upgradation on the Municipal Act clause which allows the Commissioner to provide services to ensure the health and safety of the population. Experience has shown this approach to be expeditious, rapidly implementable, and allows many more households to be serviced.
- Recognize that poor households need to manage cash flow at least as carefully as governments. Requiring beneficiaries to take loans based on government's promise to deliver services is unnecessary. SNP experience shows that households pay as works progress—and defaults on beneficiaries contributions did not threaten the financial viability of SNP. Thus, setting the threshold for starting contracting lower than the 80 percent used in the SNP makes sense. Allowing procurement to start after households have contributed 20 percent of their contribution manages government's risks reasonably. If problems are encountered in the course of implementation, this figure can be revised.
- The NGOs organizing the CBOs should be remunerated to cover costs. A full cost recovery model is the only path to working at large scale in organizing beneficiary communities. We are recommending their work be budgeted at Rs. 10,000 per household, and that funds be earmarked up front for this purpose to avoid any arrears in payments to NGOs which slowed down and narrowed the scope of the SNP program. Community organization is as crucial an input to the program as good engineering, and needs to be paid accordingly.
- Reduce reliance on micro-finance. Qualification for a loan for the household contribution was a requirement for the SNP program. This is cumbersome and time consuming for the MFIs, the CBOs, the NGOs, and the households. Yet many households can afford their cost contribution without finance if spread over the 15 to 24 month implementation period for upgradation. This amount should be not larger than 20 -30 percent of annual household income for many slum households. Besides being cumbersome and time consuming, the requirement to take out a loan imposes an interest burden on households that brings no benefit to project finances, since the household contribution is held in escrow until satisfactory completion of the works.

---

<sup>31</sup> Rajiv Awas Yojana



- Build an operating model suited to the modular repetitive nature of neighborhood upgradation. The 422,000 households living in Ahmedabad's slums and chawls are spread over hundreds of neighborhood slum pockets. To achieve fast and tangible results at scale, many pockets must be dealt with at a time, requiring a large number of engineers and community organizers over a limited period of time. However, because each sub-project is relatively small, they do not easily attract the attention of departments working on large and higher visibility city infrastructure projects. To address these problems, an implementation framework should encourage both specialization and scale.
- Specialization can be achieved by a dedicated unit working only on these projects.
  - Because there would be a large demand for a relatively limited period, this capability could come by creating a temporary workforce, on a contract basis to meet the needs of the program for a few years.
  - Especially for scarce skills like engineering, this could address what is frequently a shortage of necessary skills in government ranks without bloating the civil service with posts that will later be redundant.
  - Keeping sufficient engineers on hand to approve works can speed considerably the flow of benefits to neighborhoods once all the investments have been made. Deputation of engineers from their regular departments to a specialized unit can provide a critical mass of engineers, and a deputation premium would make this otherwise unglamorous work more attractive.
  - Specialization of procurement of materials for the neighborhood upgrading program would also avoid bottlenecks in the common stores—which often slowed down works even when contractors were ready and willing to move forward.
  - Creating a standardized modular contract that allows lumping together a number of neighborhoods to be upgraded in a single contract would make neighborhood upgradation attractive even to the larger contractors, who tend to be technically and financially more reliable, and therefore speed execution while improving quality.
  - Making these modular contracts work would require an assured funding source so that short term budget constraints do not derail project execution.
- Given all the above requirements, the special purpose vehicle (SPV) structure may be suited to an accelerated slum upgradation program. The procedural flexibility that SPVs provide would make it simpler to use these customized approaches suited to slum upgradation. The institutional flexibility of SPVs, especially in manpower terms, mean that an SPV could build up and wind down the technical labor force required without burdening the Corporation with staff not needed in the long term. However, there are also concerns about ownership on the part of government, governance and accountability in SPVs and these deserve consideration as well. What is important is not the form of the institutional arrangements in an SPV, it is gaining the procedural and functional flexibility described above.



## VI. SUMMARY AND CONCLUSIONS

### What Does This Study Cover?

This study has two distinct parts. One outlines an immediate ‘no regret’ investment program. The second discusses how to restructure government’s role in the market to offer more inclusive housing solutions for all.

### Part One: Immediate Investments for City-Wide Improvements

1. The first part examines the investments government should make to ensure a basic shelter standard for all households in Ahmedabad. The analysis starts from the premise that **the first and most fundamental step to achieving this goal is providing basic neighborhood infrastructure improvements—also known as in-situ slum upgrading to all informal areas in the city.** These improvements include: in house piped water connection, in house toilets and sewer connection, drainage, paved roads, street lighting, and solid waste management.
2. Only government can provide these network infrastructure improvements, and the absence of these services consigns households to squalid living conditions and presents an insuperable obstacle to further private investment in housing improvements. Such investments are simply not worthwhile without basic environmental infrastructure investments.
3. Other programs such as providing public housing, encouraging slum rehabilitation by private developers, reservations for low-cost housing in private developments, may also be taken on, but in situ neighborhood upgrading for all must be provided. These other programs may be useful, although more expensive, more complex to implement and enforce, and not necessarily targeted to the needs of all low-income households. **They should be complements to, not substitutes for, basic neighborhood upgrading for all. Plans for providing public housing should not hold back investments needed to bring all neighborhoods to a decent minimum standard.**
4. Is neighborhood upgrading for all feasible?
  - a. Our analysis confirms that although there are over 400,000 or about 4.2 lakh households living in informal areas; a program to provide for upgrading for all is feasible and far more affordable than other options.
  - b. Already the Slum Networking Program has served 14,000 households in Ahmedabad with these same services.
  - c. Rs. 50-60,000 per household can cover all the costs of neighborhood upgrading including community organization. **This is somewhere between one fifth and one tenth of the cost of providing public housing.**
  - d. When implemented over 5 years, such a program is affordable. A program covering all slum and challi households would require additional capital expenditures of about 20 percent over the amount the AMC is currently spending on capital account. If, as some estimate, 60 percent of households in challis and slums already have in house toilet and water facilities, these costs would be even lower, possibly as low as 13 percent of the current capital budget.

5. An inclusive infrastructure improvement strategy should not leave out those households (hhs) who do not have homes at all, pavement dwellers (about 3,000 hhs) , or those who are living in unsafe areas subject to flooding (about 22,000 hhs) . For the former, more work is needed to understand robust solutions to meet these households’ specific needs. For the latter category, the majority live around three lakes. Investments in flood mitigation works around the lakes together with neighborhood upgrading are both more cost effective and less disruptive to the families concerned than relocation into public housing.
6. Basic minimum living standards should be provided to all informal neighborhoods—including private lands and central and state lands. The Municipal Act allows the Commissioner to upgrade neighborhoods without affecting tenure, as part of his responsibility to provide for the health and safety of the population. Upgrading under this clause will not necessarily provide a ‘no eviction’ guarantee to slum dwellers. However, most households will agree to contribute to such a scheme for basic upgradation even in the absence of a no eviction guarantee. While it is desirable to provide security to poor households, requiring security as part of upgrading *de facto* excludes many families from programs to provide them with tangible and immediate improvements. **This exclusion is very undesirable and can be avoided.** Moreover, difficulties with honoring some of the tenure guarantees provided in the past have tarnished the reputation of in situ upgradation program, thus reducing commitment to community based upgrading as practiced in the SNP.
7. An inclusive infrastructure improvement strategy should not stop at neighborhood upgrading alone. Adding a large number of household connections will place stress on a system that is struggling to keep up with the needs of a fast growing city. Such stress could downgrade services to households now connected and unnecessarily pit them against the families being connected to networks for the first time. Aggregate water consumption and flows into sewerage and drainage networks would surely rise if the roughly one third of households are added to these networks. **Therefore, a substantial program of bulk supply and network distribution capacity improvements should accompany the slum and challi improvement program.**
8. Ahmedabad has had a very substantial experience with programs to improve services in slums and challis. Much has been learned that can improve the speed and effectiveness of implementation of an in situ slum upgradation program. Using these insights, upgrading more than 4 lakh households over five years becomes a reasonable, if ambitious, goal—not one beyond the reach of the much enhanced capacity of the AMC and the many civil society groups working in Ahmedabad’s informal neighborhoods. However, the design of the program needs to simplify and build upon lessons learned from earlier efforts.
9. To speed implementation, we recommend the following measures:
  - a. Establish a dedicated unit, be it an SPV or other institutional structure, under the AMC, for implementing the program. This could build on the successful experiences in AMC of the BRTS, the hospital, and the Sabermati Riverfront project. A specialized cell or SPV could take a number of measures to make work progress more quickly, among others:
    - i. Deputing officers with a pay premium to compensate for working on smaller and less glamorous projects. These premia will reflect the AMC’s commitment to the inclusive aims of the project.

- ii. Avoid using central stores for purchase of materials, and tailor a specialized procurement system to the needs of this project.
  - iii. Create bundled contracts with competitively set rates for works that will be repeated with many variations across many different slums. This will permit financially strong and competent large contractors to bid for the works and complete the works quickly to good quality standards.
  - iv. Allow contract costing at market rather than PWD rates, which do not always capture price escalations and therefore discourage strong contractors from bidding. Creating a system only attractive to smaller, weaker contractors slows down progress of works due to poor contractor performance and financial problems. Our estimated costs reflect market rates, and they are still quite affordable.
  - v. Permit outside contracting of specialized skills required only for the limited period of the project. This can reduce reliance on AMC engineers whose workload will not permit rapid execution and approval of a large number of small projects.
- b. Start work quickly in priority neighborhoods (criteria to be set) to demonstrate ability to achieve results for communities willing to work with the AMC. This work should start before completing comprehensive and detailed surveys of needs in the city. Such exercises can work in parallel. Based on this initial survey and the many other initiatives undertaken to pilot slum upgrading under RAY, AMC should be able to estimate the costs accurately enough to produce project documentation and obtain funding for a city-wide program.
- c. Adapt financial requirements for participating households so that they can meet their financial obligations over time, thus ensuring accountability of contractors and participating NGOs.
- i. Rely less on micro finance for household contributions. Requiring beneficiaries to qualify for a micro loan for their contribution to the project (Here estimated at Rs. 5000 per household based on consultations with community groups) slows down project implementation by 3-6 months. If households are allowed to pay in their contribution based on the progress of works, as would any household hiring their own contractor, the need for micro-finance is much less and micro-loans can be optional.
  - ii. Allow works to commence once 20 percent of the required contribution is paid.
  - iii. Allow local MLA's to pay up to 50 percent of the household contribution, provided this is paid for all households in the slum pocket/challi to be upgraded.
- d. **Increase the payment to civil society organizations (CSOs) including NGOs for organizing neighborhood community based organizations (CBOs), supervising the works, and facilitating implementation to cover their costs fully.** In the SNP, the rates were set well below the costs to the participating CSO, and were not always paid on time. When actual costs exceeded set rates, the CSO contribution became substantial. If CSOs are to be expected to organize over 4 lakh households into CBOs for hundreds of slum pockets, they cannot be expected to subsidize such a large operation. Indeed, community organization at this scale will require the hiring of large numbers of additional staff or contractors at market rates. The estimated costs of the community mobilization program are

estimated at Rs.7,000-10,000 per household and yet the overall costs of the program remain manageable.

10. **Finally to sustain and build support for the SNP, civil society organizations and government may join in a public relations campaign to raise public awareness of the social and economic benefits of the new neighborhood upgrading project.**

## **Part Two: Addressing Structural Problems that Drive Up the Cost of Housing and Create Chronic Informality**

1. All over India, and in many other countries around the world, government is expected to take an active role in ensuring that affordable housing is built to meet the needs of low-income groups. Economists would argue that there is no compelling need to subsidize housing, a purely private good. Income transfers, rather than housing, are seen as a better solution. **However this is not practical and most countries provide public housing or incentives for private developers, such as reservations for EWS/LIG<sup>32</sup>.** Ahmedabad is no exception. It has availed of central programs supporting construction of new formal homes, and the Ahmedabad Urban Development Authority (AUDA) has effectively presided over an expansion of public housing.
2. **In nearly all countries, however, government efforts in this domain fall well short of meeting needs.** Budgets are limited. When formal private housing is expensive, it is extremely difficult to target publicly provided housing to low-income groups only. It is particularly difficult to address the problem through public housing when formal housing is beyond the reach of a large share of the population. One must look beyond government programs to supply housing directly if the goal is to ensure all housing meets a decent minimum standard for a growing population.
3. The scope for solving the problem by building new government housing is very limited, first because the amount of additional supply that even efficient governments can provide in relation to the number of households living in substandard conditions is very small. Second, while governments may build new affordable housing on the one hand, on the other hand their policies, investment programs and administration of land often make it difficult for anyone in either the public or private sector to provide legal formal housing with good infrastructure services on large scale. Put otherwise, government's indirect impact on the operation of the market far outweighs their direct impact on supply by building houses.
4. This is the case in Ahmedabad. **About one third of households live in slums and challis, and the number of households living in slums has increased by 18% over the last ten years.** This has happened even though the city economy is thriving and median income in Ahmedabad has increased to 2.7 times what it was in 2001. Median household expenditure based on National Sample Surveys has increased in real terms by over 5 percent annually from 2004/2005 to 2009/2010. But available data indicate that formal housing prices have increased by 70 percent in the last four years, more than double the rate of increase of prices in the state (as calculated using the GDP deflator). So affordability remains a problem even in an economy of relative prosperity. **Today, roughly half of the population could not afford to buy a well located new formal home.**

---

<sup>32</sup> Economically Weaker Sections and Low Income Groups

5. **The flow of new private formal housing of all types is very low in Ahmedabad, probably only about 10 percent of total new production, which is itself only 2.4 percent of the existing stock. Shifting the share of new private housing into ‘affordable housing’ through reservations or PPP schemes such as in-situ slum rehabilitation will have only a very small impact on the large share of the population living in slums.** Government produces about 5000 units per year, showing a recent increase due to central program subsidies. Perhaps another 2,500 units could be provided by reservations for low-income housing—provided these reservations are actually enforced.
6. We estimate that 422,000 households live in slums and challis. At a rate of 7500 government sponsored units per year, it would take over 50 years to address the problem for today’s slum population alone.
7. Even this ambitious performance would not provide for the additional households who cannot afford formal homes. Over the last ten years, on average 5,600 new households per annum, or 90 percent of our estimate of government capacity to provide new affordable housing directly, are added to the existing population in slums.
8. These simple calculations –which abstract from many of the difficulties of using public housing as a path to slum free cities---nonetheless illustrate an important point. The magnitude of the problem is such that public production of housing and reservations will not solve the problem. **No matter how important public housing initiatives and affordable housing reservations may be—they cannot alone ensure that all of Ahmedabad’s families can live in a decent dignified home in a foreseeable future.**
9. **Our assessment of changes in land use patterns and the physical patterns of supply of new homes suggest that government practices and policies are making housing more costly and out of reach of a large share of the population. This is happening quite independently of government programs to build public housing and enhance reservation policies.**
10. Government can do much more for housing affordability by re-examining its role in real estate markets, and making it easier and less costly to provide formal homes all over the AMC.
11. Positive Developments: How has government facilitated flexible and responsive housing supply?
  - a. The DP approved in 2002 increased the land available for urban development by sizeable 43 percent. A total of 127sq km of new land was zoned for urban development.
  - b. Thanks to streamlined procedures subsequent to the earthquake in 2001, TP schemes have provided basic infrastructure and services in these new areas.
  - c. These conditions give Ahmedabad an advantage over many other cities where such infrastructure is not yet built, and urban expansion is therefore costly and disorganized.
  - d. Reservations and zoning limitations have been reduced, creating more flexibility in land use.

- e. The repeal of the Urban Land Ceilings Act has stopped the process of notification which freezes lands for development, leaving them in legal limbo and undeveloped.
- 12. Remaining Agenda:**
- a. Our assessment shows many symptoms of a very tight land market. Development of the city over the last ten years shows developers moving out further into the periphery and economizing on land as they do. Built up densities even in the newly developed suburban areas are very high—higher than densities in the central business district of Ahmedabad (CBD). Formal developments are fragmented on the periphery—suggesting difficulties in obtaining plots for development. **Overall density of built- up space in Ahmedabad is rising. Normally, as incomes rise, densities in formally developed areas go down, reflecting a taste for larger homes and more open space as incomes grow. Ahmedabad is going in the opposition direction.** In aggregate, households are economizing on land, even more than they did ten years ago when their incomes were lower.
  - b. Government policies forces households and developers to use more land than needed to provide legal formal and well located housing.
- 13. Areas for policy change.** A number of policy changes could reduce the restrictions in the current supply system and allow all producers in the market to provide more and better affordable homes. Since these policies all interact in the decisions on where and how to build homes and the price the market will bear to purchase them, it is not wise to focus on the one or the other stroke of the pen reform to improve outcomes. Housing supply is a system, and the government is involved in nearly all the important points in the system, from infrastructure provision to property rights enforcement to building by-laws. Reducing one constraint may simply shift the pressures in the market elsewhere. We provide the following list of areas for attention and if necessary, incremental change. Even if reforms are incremental, they should affect housing providers across the board to make the system more open and competitive. Selecting a preferred reform among any in the list below, for selective exemptions to specific developers, will not result in a responsive affordable supply system for a dynamic economy. The list of areas for reform below should be read with this important context in mind.
- 14. Maximum Floor Space Index (FSI) remains uniform and low at 1.8 throughout the AMC.** The central business district in West Ahmedabad, one of the most desirable areas of the city, has among the lowest densities in the city—meaning that only the privileged few can afford to be in this desirable area. With such low FSI's, redevelopment to respond to new demands is either not possible or not economical. As a result, new development is forced into the periphery, as has happened for example along Ashram Road extending to the suburbs.
- 15. Redevelopment or major improvements of already developed areas in the city—even if allowable under the maximum FSI limits—is very risky and difficult because of ambiguity in land tenure and property rights.** It can take years and considerable sums to settle any title problems that arise in a redevelopment project and the risks of legal challenge after a major redevelopment are considerable. So, the costs of expanding housing in well located areas through intensified redevelopment are very substantial. This too forces new development into the periphery on newly developed land.

16. But Expansion at the Urban Periphery is Still Difficult, Costly and Uncertain
  - a. Of the land newly zoned for urban development in the AMC, since 2002, only about 20 percent actually has been developed, in spite of rapidly rising prices.
  - b. While many TP schemes have been started since the new DP was in place, none of them has completed the process of converting all lots from rural to urban designation and approving new ownership boundaries. Unlike zoning for urban use, this process takes place plot by plot and is slow and unpredictable. It takes good knowledge of a complex system and ability to fund the project over the long period of uncertainty while obtaining approvals to undertake a significant formal development. This helps established developers and excludes large many small housing producers and thus makes the developer sector less competitive.
  - c. The reforms of the TP scheme process after the earthquake in 2001 have made it possible to build infrastructure before settling tenure and rural urban conversion problems. However, the infrastructure benefits are blunted by the regulatory uncertainties surrounding many of the serviced plots. The fragmented, but high density development at the urban periphery observed in our assessment is an indicator that arduous and slow plot by plot clearances are preventing full use of the infrastructure.
17. All the above factors make land difficult and costly to get. As a result, prices of land rise, and land becomes the most important factor in the cost of a home. Well located land is particularly scarce and particularly costly. This penalizes the lower income groups, who can ill afford either the cost of transport or the time for lengthy commutes.
18. Government further aggravates the problem with the General Development Control Regulations. These regulations, running to many pages, fix a number of land use and design parameters that make formal housing voracious consumers of land—the most expensive input to a home.
19. Setbacks, plot coverage limitations, requirements for parking and elevators impose upper middle class tastes on new formal development. These standards are set throughout the city, allowing no variation by neighborhood.
20. These regulations have made it impossible to continue to build ‘vernacular’ traditional developments that now make up a large share of the housing stock in Ahmedabad. These developments are pleasant, affordable, and use land more effectively than the standard apartment building developments that are the lowest cost formal options in Ahmedabad. Vernacular neighborhoods economize on land and privacy to emphasize more living space, but these options are not legal and could not get formal approval. Regularizing tenure in such developments would also be costly and risky, since an early step in the process is demolition of any substandard buildings.
21. Allowing more flexibility in the multiple requirements in the GDCR would offer options for supply of lower cost formal housing, which is still safe, decent, and acceptable to cultural norms and practices. Selective application of different standards in different neighborhoods could open up more options for affordable formal housing. Scope to allow grandfathering of housing that is safe and clean but not up to GDCR standards would facilitate regularizing tenure and increase the supply of legal housing that can be mortgaged and improved using formal finance channels.



22. Ahmedabad needs more

- a. More in situ neighborhood upgradation in poor neighborhoods
- b. More investments in bulk supply and infrastructure networks to accommodate rising demands for infrastructure with rising incomes and improved slums
- c. More flexibility in standards for formal housing
- d. More differentiated FSI to meet demands for well-located space
- e. More expeditious pathways to resolution of property rights disputes
- f. More predictability and speed in rural urban land conversion that will lead to a more competitive and open entry for supplying housing.

## Annex 1. Computation of Distribution of Household Income in AMC

---

The principle source of household data for computing distribution of income by household is the National Sample Survey (NSS) data. The NSS rounds provide survey data on expenditure by household. The data is compiled by district, then divided into rural and urban samples. Therefore the closest approximation of the area of our study within the NSS framework is the Ahmedabad urban district, of which the AMC population is over 80% of total population. The NSS rounds of measuring household expenditure are available for 1999/2000, 2004/05 and most recently 2009/2010, which was released as this study was being prepared. It is generally recognized that the 1999/2000 round is not comparable with the more recent rounds so we did not use it for estimating household expenditure distribution for the start year of our study of 2001. Instead, we took the expenditure data from 2004/05 and rebased it to 2001 using the growth rate of nominal per capita income in Gujarat State between 2000/01 and 2004/05 as published by the Central Statistical Organization. Unfortunately, income growth for the AMC or Ahmedabad Urban Agglomeration is not published in Gujarat, unlike in some other states. Income growth in Ahmedabad could well have been higher over this period, since urban areas tend to grow more rapidly than rural areas. On the other hand, Gujarat has experienced exceptionally rapid agricultural growth over the last ten years, so the difference in Gujarat may not be as pronounced as it might be in other states. The correction factor applied for this purpose is 0.71. To estimate income distribution in 2011, we used data from the sample survey of the NSS 2009/10 round. This was then adjusted to 2011 by multiplying by the increase in net per capita income for the state of Gujarat between 2009/10 and 2010/11, which reflected growth of 14% in nominal terms. Since we measure affordability in relation to nominal housing prices, it is important to estimate the income distribution in nominal terms as well. As can be seen in Annex 2, prices of housing appear to be rising more rapidly than incomes for the state as a whole.

To test the slight difference in coverage between the AMC and the Ahmedabad urban area, we generated an expenditure distribution for the AMC area using the poverty mapping methodology prepared for the Planning Commission by the India Development Foundation based on mapping the 2001 census data and the 2004/05 NSS expenditure survey data<sup>33</sup>. To do this, we included those census areas that were outside the AMC in 2001 to obtain census data for 2001 covering the same geographical area as the current AMC. This methodology also permits us to increase the sample size considerably and hence improve the reliability of the estimates. This was compared to the expenditure distribution for the same area in 2004/05 using the NSS data. The difference between the NSS median expenditure for 2004/05 and the AMC estimates for 2004/05 using the poverty mapping methodology is 2.8%, which gives us confidence that we have a reasonably reliable estimate of the NSS expenditure distribution as of 2004/05. Using the NSS data for both 2004/05 and 2009/10, we were able to estimate two different expenditure distributions at two points in time and capture recent developments in the income distribution.

---

<sup>33</sup> See Hentschel, Jesko, Jean Olson Lanjouw, Peter Lanjouw, Javier Poggi. (1998). [“Combining Census and Survey Data to Study Spatial Dimensions of Poverty and Inequality.”](#) *The World Bank Economic Review* for a description of this method. We are most grateful to the IDF and Ms. Purti Sharma of the IDF. She applied their poverty mapping model to the AMC area for this purpose.

Once the 2011 census data are available, in principle it would be possible to apply the poverty mapping methodology for refining the expenditure distribution.

For examining housing affordability, most rules of thumb are based on income, not expenditure. However, estimates of income distribution by detailed income classes are not prepared in India. To convert expenditure to income, we assumed that the savings rate across income classes was 65 percent which is close to average propensity to consume out of household disposable income in the national income accounts in recent years. Lower income groups, which are of most interest to us, may save at lower rates, so to the extent that this is true, these estimates of income may be on the high side. We also corrected for the well documented difference between household consumption as estimated in the national income accounts by increasing consumption expenditure by 30%. For those who feel that this adjustment is not warranted, then our estimates of income are biased upward by the same factor for the two periods under study. As such, estimates of affordability of residential real estate based on these income distribution figures may be somewhat biased upward by our choice of adjustments. However, this may compensate to some extent for the perceived bias of NSS data toward lower income groups. Our results are striking in that—even with such generous estimates of income growth—a large share of the population, 50 percent, would have difficulty affording a new well located formal home. If one were to adjust income estimates downward, this implies an even larger share of the population would find new formal housing unaffordable.

## Annex 2: Ahmedabad: Residential Prices

---

### 1. Sources of data

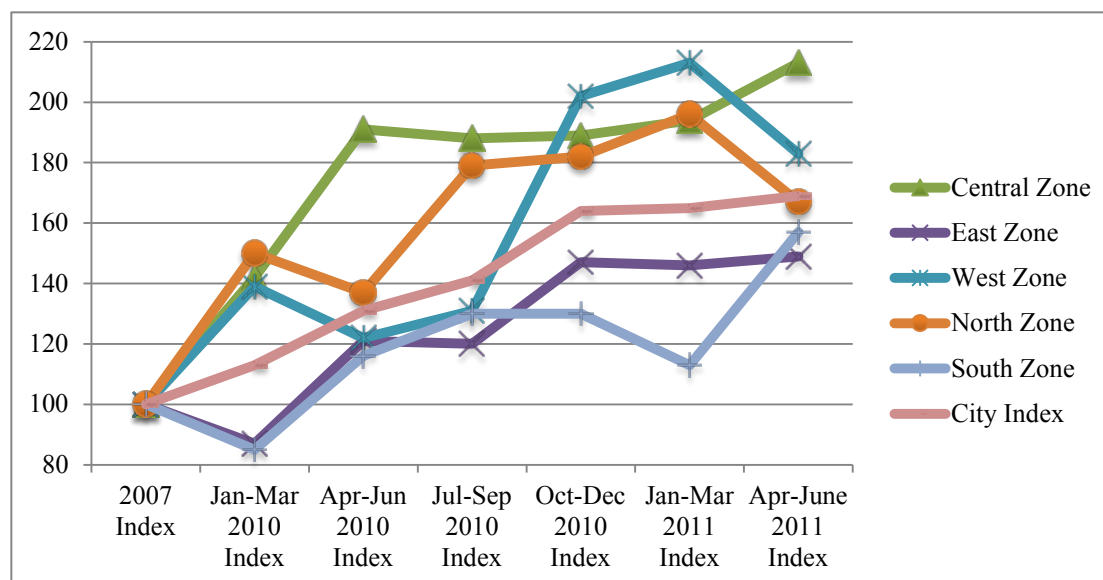
There are two potential sources of data. The first one is RESIDEX compiled by NHB. However this is an index does not give prices in absolute numbers. The other source is Accommodation Times a journal that has been tracking real estate prices for a long. There might be other local sources but they are not in public domain and not easily accessible.

### 2. NHB RESIDEX

The RESIDEX data available for Ahmedabad is given in Table below. It covers 2007 as the base year (100) and then quarterly indices for five zones of Ahmedabad from 2010 to 2011.

Ahmedabad		2007 Index	Jan-Mar 2010 Index	Apr-Jun 2010 Index	Jul-Sep 2010 Index	Oct-Dec 2010 Index	Jan-Mar 2011 Index	Apr-June 2011 Index
<b>Zones</b>								
Central Zone	Bhadra, Dudheswar, Gaikwad Haveli, Girdhar Nagar, Wadigam	100	142	191	188	189	194	213
East Zone	Gomtipur Gam; Old Viratnagar; Vastral; Zulta Minara	100	87	121	120	147	146	149
West Zone	Bodakdev; Ambli Bopal; Jodhpur; Solagam; Thaltej Shilaj Road; Vastrapur; Vejalpur; Sola Road; Ambawadi; Chandkheda Gam	100	139	122	131	202	213	183
North Zone	Buddh Nagar; Saijpur-Bogha; Sardar Nagar; Vishnu Nagar	100	150	137	179	182	196	167
South Zone	Abad Dairy; Bhaduat Nagar; Gordhan Vadi; Ramvadi; Vatva Gam; Vishal Nagar	100	85	116	130	130	113	157
City Index		100	113	131	141	164	165	169

These indices are graphically shown below.



### 3. Accommodation Times

Accommodation Times provides prices in absolute numbers for 2009 and 2010. These are shown below.

Ahemdabad

Rs. / Sq.Ft.

Residex Zone	LOCATION	NEW PROJ.			
		RESIDENTIAL		COMMERCIAL	
		2009	2010	2009	2010
West	Ellisbridge	1200-2400	2200-4600	1200-2400	4000-12000
West	Ashram road	1950-2350	4000-5000	3200-4800	3200-6800
West	C.G.Road)	1250-1950	3000-6000	2400-8200	2400-8200
West	Navrangpura	950-1400	2000-2400	1950-3500	1950-3500
West	Naranpura	500-1200	1200-295	1950-2300	1950-2300
West	Vastrapur	600-950	1200-295	1750-295	1750-295
West	Satellite Road	880-1600	4000-6000	2950-3200	2950-7200
West	Ambawadi	500-195	2000-2400	950-1500	950-1500
West	Drive-in-road	800-1200	2000-2400	1500-295	1500-295
West	Paldi	500-950	2000-2400	1500-195	1500-195
West	New C G Road	500-950	3000-4000	500-1200	500-1200

However all the zones in this zone are in larger west zone used in RESIDEX. Thus the coverage of Accommodation Times is not adequate to get city-wide data particularly of outer zones of AMC.

## Annex 3. Ahmedabad: Cost of Slum and Chawl Upgrading

---

### 1. Introduction

The intention of the upgrading program is to cover all slums and challis with the provision of basic environmental infrastructure – water supply, sanitation, storm water drainage, streets and streetlights and solid waste collection. Estimates of cost of upgrading in terms of ‘order of magnitude’ are necessary for designing the program and establishing its feasibility. This is what is attempted for this paper.



Map 1  
Ramapir No Tekro, West Zone,  
Ahmedabad.  
(Source: Google Earth)

### 2. Sample Slum: Ramapir No Tekro

A representative slum called Ramapir No Tekro located in the West Zone in Vadaj Ward having an area of 36.29 ha. and total number of 7,269 households is selected for estimating the cost of upgrading. Map 1 shows the aerial image of the slum. There are some elements of the following environmental infrastructure currently available;

- Streets
- Water Supply
- Sewerage
- Storm water Drainage
- Solid waste management
- Streetlights

However as the status of existing infrastructure is not known, the costs have been estimated without taking into account the utility of the existing assets. The estimates thus represent the outer limits of cost at 2011 prices.

### 3. Standard of Services

Since most slums are part of the larger network of trunk or primary infrastructure, the standards of delivery of services depend upon the availability and the capacity of such primary infrastructure. In the present exercise on-site infrastructure costs have been estimated for the desired standard of service without explicitly evaluating the availability and capacity of off-site infrastructure. The targeted standards and likely variations in off-site availability are presented in Table 1.

Table 1: Standards of Service Delivery

On-site Standard	Likely variations
<b>Water supply</b>	
Quantity: 140 lpcd (as individual WC with water borne sewerage is intended). Off-site municipal main not available. Separate rising main required from the pumping station.	Where municipal mains of adequate capacity are available nearby, cost savings may occur.
<b>Toilets and Sewerage</b>	
Water Closet for every household	Physical constraint of hut size may dilute this intent and WC shared by 2 or 3 households may have to be accepted.
On site collection system linked to the municipal sewer.	Depending upon the invert levels this may require pumping or in case of non-availability of municipal sewer, local treatment and disposal (e.g. Septic Tank & Soak Pit) may have to be provided as a short term solution.
<b>Roads and Storm Water Drainage</b>	
Roads wider than 6m are designed for light vehicular traffic e.g. auto-rikshaws and garbage tempo and occasional ambulance and fire engine. Streets narrower than 6 m are essentially designed for auto-rikshaws, two wheelers and pedestrians. No widening is proposed.	In some cases where existing streets are extremely narrow and long, some widening may be desirable. In that case sacrificing some front space like verandahs or resettlement of a few households within the slum may become necessary. Such changes are minimized when decided by the community
Storm water drainage designed for the maximum rainfall intensity of 25 mm per hour is considered adequate for Ahmedabad. The entire surface of narrow streets with suitable slopes is used for draining rainwater. Along wider streets piped drains with catch pits and inspection chambers are provided.	Invert levels of off-site municipal storm drains may impact the designs and costs. Where space is available rainwater harvesting to recharge ground water could also be considered.
<b>Solid waste management</b>	
AMC currently provides door-to-door collection service for solid waste within slums. Cost of vehicles for such a service is not included. But a collection point from where a dumper placer could pick up the collected solid waste is provided.	At certain places, the space for the dumper may not be available.

#### 4. Estimates of per Household Costs

The standards mentioned in Table 1 were translated into engineering designs, materials and specification to arrive at quantities and based on current market rates into estimates of costs. These are presented as per household costs and likely variations in Table 2.



Table 2: Per Household cost of upgrading

Infrastructure	Cost per Household	Likely variation
Water supply	6522	Cost may increase to Rs. 10302 if Elevated Reservoir and / or Underground Tank is needed for local storage
Sewerage	6462	Cost may increase to Rs. 8455 if pumping is involved and to Rs. 17250 if local treatment by way of septic tank and soak pit is required.
Roads	5393	
Storm Water Drainage	322	
Streetlights	1218	
Solid waste removal	380	
WC accommodated within the existing structure	5861	If entirely new structure is required cost may increase to Rs.20492
Community Hall	108	
Total	26265	Maximum cost would be Rs. 57985
15% mark up for difficult conditions of work in slums	30000	67000

The details of engineering designs and estimates of costs are given in Annex 1. Thus the average cost of upgrading (only civil cost) comes to Rs. 47,000 Approx. Cost of other program elements like management costs, survey, design etc is outlined below.

Table 3

Per Household Cost		2011-12
Management Structure		90
Project Preparation % of Civil Cost	1	470
Project management % of Civil Cost	2.5	1,175
Survey, Household Data		7,200
Community Consultation & Design		
Civil Works		47,000
TOTAL		55,935
	Approx.	56,000

Thus, the total per household cost of the Upgradation Program would be approx. Rs. 56,000.

## 5. Civil Cost of the Upgrading Program

Assuming that the total number of households to be covered under the upgrading program is 400,000; the total civil cost of the upgradation program may vary between Rs. 1,266 crores and Rs. 2,827 crores.

## 6. Augmentation of City-Wide Networks

The above costs are essentially on-site local costs. The assumption that every household will have an individual water connection and an individual WC might substantially increase the demand for such services as compared to the present levels of delivery. The trunk or primary infrastructure network may not have the capacity to cope with the demand for services at the assumed standards. It would therefore be useful to assess the network capacities and plan for

their augmentation concomitant with the slum-upgrading program. However quantification of cost of network augmentation has not been attempted here.

The Ahmedabad Municipal Corporation in its budget for 2011-12 has already identified and allocated funds for a number of initiatives aimed at augmenting citywide infrastructure for water and sewerage. They are:

- a. 24 hr water supply service (Pg 11)– Rs. 2 Crores  
Though the overall quantity of water supply is sufficient to provide 140 lpcd, certain areas of the city are not receiving adequate supply. A pilot project shall be undertaken to plan and implement 24 hr water supply service within Ahmedabad. This has been implemented in other cities to good effect and could help Ahmedabad manage its water supply better.
- b. Online water quality maintenance System (Pg 12) – Rs. 1.75 Crores  
In order to have better monitoring of water quality at the three water treatment plants in the city (Kotarpur, Jaspur and Raska), an online quality maintenance system has been approved for implementation .
- c. Drainage Pumping Station (Pg 12)– Rs. 4 Crores  
One new drainage pumping station for the newly incorporated areas in order to improve drainage system near Chandkheda has been included in the budget.
- d. 22 new Borewells (Pg 12)– Rs. 5Crores  
Addition of borewells to 22 existing distribution stations in various areas within the city has been included to ensure that in case of emergency situation when surface water is difficult to procure, water can be provided to the citizens.
- e. New overhead tanks (Pg13)– Rs. 30 Crores  
Provision of new tanks for overhead storage of water in 8 wards and increasing capacity of existing tank in 1 ward has been included in the budget for the purposeof providing water at adequate pressure to residents.
- f. Providing services to communities built by Gujarat Housing Board and Slum Clearance Board (Pg 13) – Rs. 10 Crores  
To improve quality of services such as water, drainage, streets, footpath, garden, streetlights etc, in communities built by GHB and SCB, AMC has allocated Rs. 10 crores in the current budget.
- g. Gamtal Service (Pg14)– Rs. 20 Crores  
The gamtals newly incorporated within AMC limits (in 2006) shall be provided better services and infrastructure and community facilities in order to better integrated them with the urban area. This will also help improve the gamtal areas and make them more desirable places to live in.

Based on the above, it can be seen that AMC is already undertaking initiatives to improve trunk infrastructure and access to the services. These initiatives could be suitably expanded to meet increase in demand due to upgrading of slums and chawls.

## 7. Cost of the Program

The cost of the program has been worked out based on the following key assumptions

1. Total number of household to be upgraded - 400,000
2. Per Household cost of upgrading at 2011 prices – Rs. 56000
3. Project preparation and project management cost – 1% and 2.5% of civil work cost respectively
4. Rate of inflation 9% p.a. for the next five years.

Based on these assumptions, Tables 4 and 5 give cost of the program for a five-year and three-year implementation plan respectively.

Table 4: Program Cost for Five-Year Implementation

Data								
Households to be upgraded		400000						
Key Assumptions								
Option=	1		Year 1	Year 2	Year 3	Year 4	Year 5	
1 - 5 Year			10	15	25	25	25	
2- 3 Year			25	40	35			
Inflation % p. a.			9	9	9	9	9	
Summary of Cost of SUP Program							Rs. in Crores	
Item		Initiation	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Households upgraded			40,000	60,000	100,000	100,000	100,000	400,000
Management Structure		0.05	0.78	0.86	0.93	1.02	1.11	4.75
Project Preparation % of Civil Cos	1	2.05	3.35	6.09	6.63	7.23		25.35
Project management % of Civil Co	2.5		5.12	8.38	15.22	16.59	18.08	63.38
Survey, Household Data,			31.39	51.33	93.24	101.63	110.78	388.37
Community Consultation & Design								0.00
Civil Works			204.92	335.04	608.66	663.44	723.15	2535.22
<b>Total</b>		<b>2.10</b>	<b>245.57</b>	<b>401.69</b>	<b>724.69</b>	<b>789.91</b>	<b>853.12</b>	<b>3017.08</b>

Table 5: Program Cost for Three-Year Implementation

Data								
Households to be upgraded		400000						
Key Assumptions								
Option=	2		Year 1	Year 2	Year 3	Year 4	Year 5	
1 - 5 Year			10	15	25	25	25	
2- 3 Year			25	40	35			
Inflation % p. a.			9	9	9	9	9	
Summary of Cost of SUP Program							Rs. in Crores	
Item		Initiation	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Households upgraded			100,000	160,000	140,000	0	0	400,000
Management Structure		0.05	0.78	0.86	0.93	0.00	0.00	2.62
Project Preparation % of Civil Cos	1	5.12	8.93	8.52	0.00	0.00		22.58
Project management % of Civil Co	2.5		12.81	22.34	21.30	0.00	0.00	56.45
Survey, Household Data,			78.48	136.87	130.54	0.00	0.00	345.89
Community Consultation & Design								0.00
Civil Works			512.30	893.45	852.13	0.00	0.00	2257.88
<b>Total</b>		<b>5.17</b>	<b>613.31</b>	<b>1062.03</b>	<b>1004.90</b>	<b>0.00</b>	<b>0.00</b>	<b>2685.42</b>

It would be seen from these tables that the five-year program needs additional expenditure due largely to the high rate of inflation. On the other hand three-year program requires a big start-up with little scope for 'learning by doing' requiring concerted and committed efforts.

## 8. Impact on Local Budget

The Average Municipal Budget of Ahmedabad for Capital Expenditures has been around Rs. 1300 crores in the last 3 years (2008-2011). This indicates their current capacity to undertake large infrastructure improvement projects.<sup>34</sup>

<sup>34</sup> \*This does not include capital expenditure towards the Sabarmati Riverfront Development Project, since it is set up as an SPV and is funded through a loan from HUDCO. However, the AMC budget does include expenses for

For a 5 year program (as mentioned above) AMC would need to increase this budget by approx. 220 crores in the first year which is 17% of the average capital budget. This allows AMC to build capacity gradually. A 3 year program would involve an additional allocation of 550 crores (42% of the average capital budget) in the first year itself. This may be a challenge for the municipal corporation since it may not allow enough time to build capacity in order to undertake such a large project.

Table-6: AMC Budget from 2008 - 2012

	all figures in Rupees Thousands			
	2008-09	2009-10	2010-11	2011-12
	FINAL	FINAL	REVISED	APPROVED BY AMC
Total Capital Income	8,762,959	10,365,515	17,762,152	28,607,000
Total Capital Expenditure	10,311,889	12,950,453	17,762,152	28,607,000
Total Revenue Income	15,541,668.00	16,169,373.00	22,353,514.00	31,975,350
Total Revenue Expenditure	9,104,426.00	11,559,960.00	13,494,597	17,903,008
Total INCOME(CAPITAL+REVENUE)	24,304,627	26,534,888	40,115,666	60,582,350
Total EXPENDITURE(CAPITAL+REVENUE)	19,416,315	24,510,413	31,256,749	46,510,008

## ATTACHMENT: Tables for 5-year and 3-year program

## FIVE YEAR PROGRAM

Table A1

**Summary of Program Cost****Data**

Households to be upgraded 400000

**Key Assumptions**

Option= 1

	Year 1	Year 2	Year 3	Year 4	Year 5
1 - 5 Year	10	15	25	25	25
2- 3 Year	25	40	35		
Inflation % p.a.	9	9	9	9	9

**Summary of Cost of SUP Program**

Item	Rs. in Crores						Total
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	
Households upgraded		40,000	60,000	1,00,000	1,00,000	1,00,000	4,00,000
Management Structure	0.05	0.78	0.86	0.93	1.02	1.11	4.75
Project Preparation % of Civil Cost	1	2.05	3.35	6.09	6.63	7.23	25.35
Project management % of Civil Cost	2.5		5.12	8.38	15.22	16.59	63.38
Survey, Household Data, Community Consultation & Design			31.39	51.33	93.74	110.63	388.37
Civil Works		204.92	335.04	608.66	663.44	723.15	2535.22
<b>Total</b>	<b>2.10</b>	<b>245.57</b>	<b>401.69</b>	<b>724.69</b>	<b>789.91</b>	<b>853.12</b>	<b>3017.08</b>

Note:

Inputs that can be refined

Table A2

**Cost of Management Structure****Assumptions and Data**

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Inflation in %		9	9	9	9	9
Management staff		Salary/monl	No of Staff	Total Cost		
Addl Commisioner / (MD)		100000	1	100000		
Admin Officer / (Company Sec)		50000	1	50000		
Zonal Engineers /(Zonal Mangers)		50000	5	250000		
Support staff and Office	50%			200000		
Overheads						
Total / month				600000		

**Yearly costs**

Initial legal costs	0.05					
Management Cost @ 2011 prices		0.72	0.72	0.72	0.72	0.72
Price contingency		1.09	1.19	1.30	1.41	1.54
<b>At current prices in</b>	<b>0.05</b>	<b>0.78</b>	<b>0.86</b>	<b>0.93</b>	<b>1.02</b>	<b>1.11</b>
<b>Rs. crores</b>						

Table A3

**Surveys, Community Consultation & Design Assumptions and Data**

Total no. of Slum Households			400000			
Area under Slums ha.			2000			
Area / Household m2			50			
Inflation in %		2012-13	2013-14	2014-15	2015-16	2016-17
		9	9	9	9	9
Cost			per Household			
Total Station Survey	6000 /ha		30			
HH Database			1000			
Community consultaion by NGP/CBO about upgrading with contarctor design engineerss			6000			
	Rs./per Day	Days per Communit y of 200 HH				
CBO Volunteers	2	250	5			
NGO Supervisor	1	1000	5			
Data Entry and Analysis	100 /ha		100			
Total per Household @ 2011 prices			7167.5 <b>7200</b>			

Yearly Cost							Rs in Crores
Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Phasing %		10	15	25	25	25	100
Households		40000	60000	100000	100000	100000	400000
Cost @ 2011 Prices in Rs. crores		28.8	43.2	72	72	72	288
Price Contingencies		1.09	1.19	1.30	1.41	1.54	
<b>Cost at Current prices</b>		<b>31.39</b>	<b>51.33</b>	<b>93.24</b>	<b>101.63</b>	<b>110.78</b>	<b>388.37</b>

Table A4

**Cost of Civil Works Assumptions and Data**

Total no. of Slum Households	400000					
Area under Slums ha.	2000					
Area / Household m2	50					
Inflation in %		2012-13	2013-14	2014-15	2015-16	2016-17
		9	9	9	9	9

**Cost per Household @ 2011 prices**

Civil Works	Range	
Water Supply	6522	10302
Sewerage	6462	17250
Streets	5393	5393
Streetlights	1218	1218
Storm Water Drains	322	322
Solid Waste Collection	380	380
Toilet	5861	20492
Community Hall	108	108
Total	26266	55465
15% mark up for uncertainty etc	30205.9	63784.75
<b>Average Cost for estir</b>	<b>46995.33</b>	<b>47000</b>

Yearly Cost							Rs. in Crore:
Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Phasing %		10	15	25	25	25	100
Households		40000	60000	100000	100000	100000	400000
Cost @ 2011 Prices in Rs. crores		188	282	470	470	470	1880
Price Contingencies		1.09	1.19	1.30	1.41	1.54	
<b>Cost at Current prices</b>		<b>204.92</b>	<b>335.04</b>	<b>608.66</b>	<b>663.44</b>	<b>723.15</b>	<b>2535.22</b>

THREE YEAR PROGRAM

Table B1

**Summary of Program Cost**

**Data**

Households to be upgraded 400000

**Key Assumptions**

Option=	2	Year 1	Year 2	Year 3	Year 4	Year 5
1 - 5 Year		10	15	25	25	25
2- 3 Year		25	40	35		
Inflation % p.a.		9	9	9	9	9

**Summary of Cost of SUP Program**

Item	Rs. in Crores						Total
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	
Households upgraded		1,00,000	1,60,000	1,40,000	0	0	4,00,000
Management Structure	0.05	0.78	0.86	0.93	0.00	0.00	2.62
Project Preparation % of Civil Cost	1	5.12	8.93	8.52	0.00	0.00	22.58
Project management % of Civil Cost	2.5		12.81	22.34	21.30	0.00	56.45
Survey, Household Data, Community Consultation & Design		78.48	136.87	130.54	0.00	0.00	345.89
Civil Works		512.30	893.45	852.13	0.00	0.00	2257.88
<b>Total</b>	<b>5.17</b>	<b>613.31</b>	<b>1062.03</b>	<b>1004.90</b>	<b>0.00</b>	<b>0.00</b>	<b>2685.42</b>

Note:

Inputs that can be refined

Table B2

**Cost of Management Structure**

**Assumptions and Data**

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Inflation in %		9	9	9	9	9
Management staff		Salary/month	No of Staff	Total Cost		
Addl Commissioner / (MD)		100000	1	100000		
Admin Officer / (Company Sec)		50000	1	50000		
Zonal Engineers / (Zonal Mangers)		50000	5	250000		
Support staff and Office	50%			200000		
Overheads						
Total / month				600000		
<b>Yearly costs</b>						
Initial legal costs	0.05					
Management Cost @ 2011 prices		0.72	0.72	0.72	0	0
Price contingency		1.09	1.19	1.30	1.41	1.54
<b>At current prices in</b>	<b>0.05</b>	<b>0.78</b>	<b>0.86</b>	<b>0.93</b>	<b>0.00</b>	<b>0.00</b>
<b>Rs. crores</b>						



Table B3

**Surveys, Community Consultation & Design Assumptions and Data**

Total no. of Slum Households			400000				
Area under Slums ha.			2000				
Area / Household m2			50				
Inflation in %			2012-13	2013-14	2014-15	2015-16	2016-17
			9	9	9	9	9
Cost							per Household
Total Station Survey		6000 /ha					30
HH Database							1000
Community consultaion by NGP/CBO about upgrading with contarctor design engineers							6000
		Rs./per Day		Days per Communit y of 200 HH			
CBO Volunteers	2		250	5			12.5
NGO Supervisor	1		1000	5			25
Data Entry and Analysis			100 /ha				100
Total per Household @ 2011 prices							7167.5 <b>7200</b>

Yearly Cost							Rs in Crores
Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Phasing %		25	40	35	0	0	100
Households		100000	160000	140000	0	0	400000
Cost @ 2011 Prices in Rs. crores		72	115.2	100.8	0	0	288
Price Contingencies		1.09	1.19	1.30	1.41	1.54	
<b>Cost at Current prices</b>		<b>78.48</b>	<b>136.87</b>	<b>130.54</b>	<b>0.00</b>	<b>0.00</b>	<b>345.89</b>

Table B4

**Cost of Civil Works**

**Assumptions and Data**

Total no. of Slum Households	400000				
Area under Slums ha.	2000				
Area / Household m2	50				
	2012-13	2013-14	2014-15	2015-16	2016-17
Inflation in %	9	9	9	9	9

**Cost per Household @ 2011 prices**

Civil Works	Range	
Water Supply	6522	10302
Sewerage	6462	17250
Streets	5393	5393
Streetlights	1218	1218
Storm Water Drains	322	322
Solid Waste Collection	380	380
Toilet	5861	20492
Community Hall	108	108
Total	26266	55465
15% mark up for uncertainty etc	30205.9	63784.75
<b>Average Cost for estim</b>	<b>46995.33</b>	<b>47000</b>

Yearly Cost							Rs. in Crore:
Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Phasing %		25	40	35	0	0	100
Households		100000	160000	140000	0	0	400000
Cost @ 2011 Prices in Rs. crores		470	752	658	0	0	1880
Price Contingencies		1.09	1.19	1.30	1.41	1.54	
<b>Cost at Current prices</b>		<b>512.30</b>	<b>893.45</b>	<b>852.13</b>	<b>0.00</b>	<b>0.00</b>	<b>2257.88</b>

## Annex 4: Evolution of City Spatial Structure between 2001 and 2011

The various regulatory constraints described above were tested for their impact on the poor. However, land use regulations like maximum FSI and maximum land coverage have also unforeseen side effects on the structure of cities. We will now consider the effects of current regulations like maximum FSI but also of TP schemes administrative constraints on the spatial structure of Ahmedabad. The viability of the dominant mode of transport – transit or individual means of transport (motorcycle or private cars) depends largely on the nature of urban spatial structures. The mobility of workers and consumers depends largely on the efficiency of urban transport, which in turn depends on the spatial structure of cities which are often irreversible in the short and medium term. We will then study the pattern of spatial development of Ahmedabad metropolitan region and try to anticipate structural problems that could be corrected become they become irreversible.

Ahmedabad - Growth of built-up area between 2000 and 2010

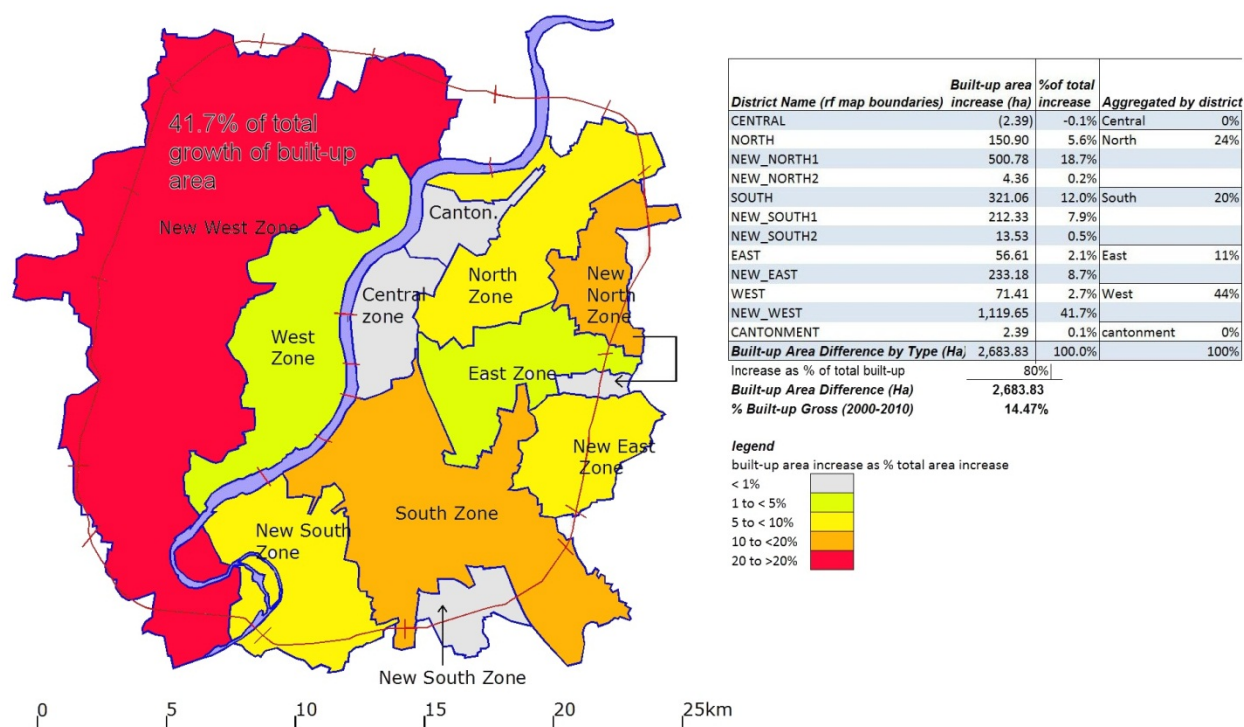


Figure 1: Map of new land development by district

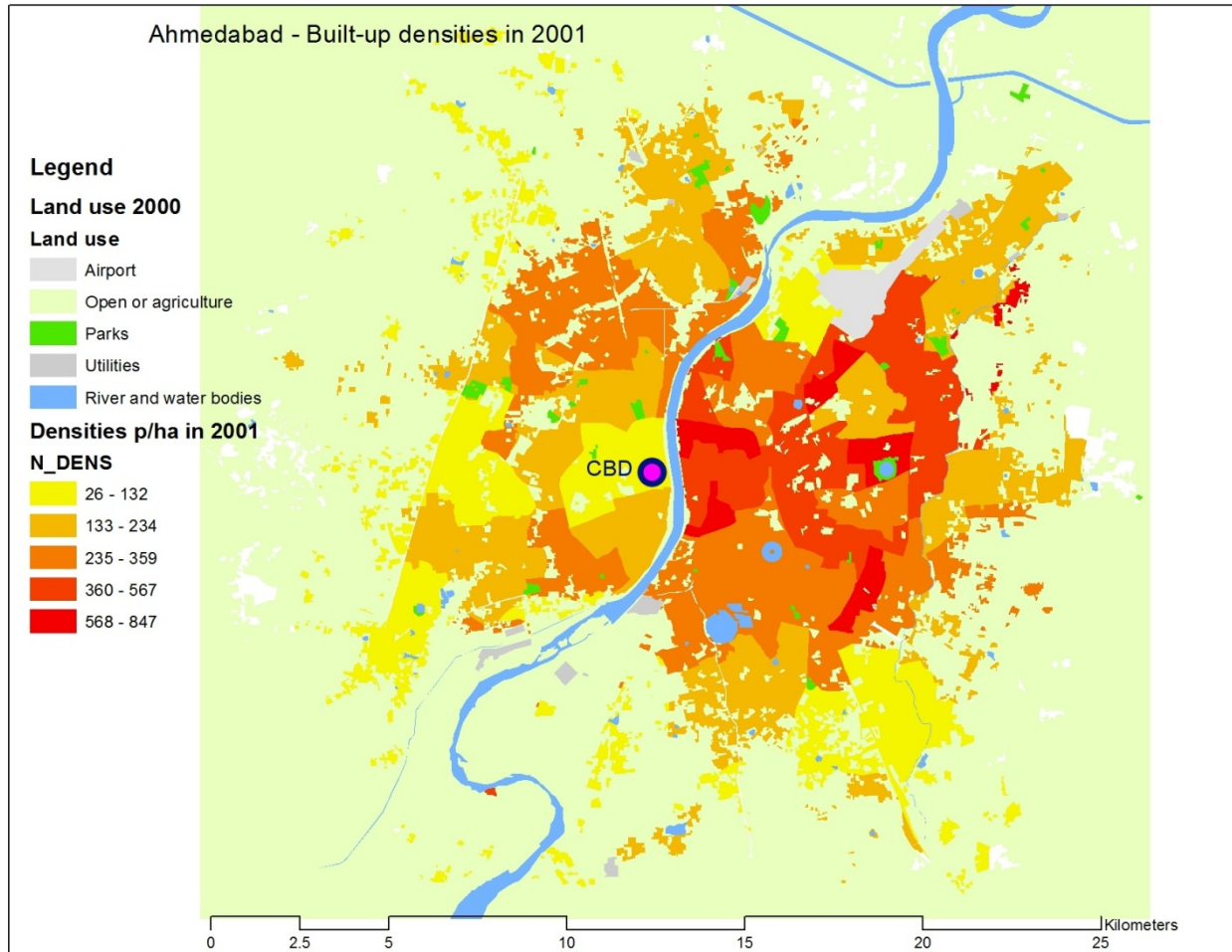
Forty two percent of the land developed in Ahmedabad between 2001 and 2011 has been located within the “new West Zone” corresponding to the 2004 territorial addition to the AMC boundaries. The map and table of Figure 1 shows the pattern of developed land increase in the AMC. It is important to note that this map and data concern only the land developed it does not necessarily correspond to the increase in population, which often has occurred through densification of areas already developed before 2001.

The table of *Figure 2* shows the change in land use between the various zones shown on the map of *Figure 1*. We can see that the bulk of the increase of the land occupied by slums has been relatively even geographically. Practically no growth occurred in the cantonment area, although it is one of the lowest developed area of the city while being the best located in term of infrastructure and access to the city center.

District Name (rf map boundaries)	Mix Built-up	Old City	Inform.Devel.	Gamtal	Industry	Large Estate	Built-up area increase (ha)	%of total increase	Aggregated by district
CENTRAL	(2.36)	-	0.01	-	(0.04)	0.00	(2.39)	-0.1%	Central 0%
NORTH	111.85	-	8.08	2.99	(9.83)	37.81	150.90	5.6%	North 24%
NEW_NORTH1	502.61	-	2.97	(2.57)	-	(2.23)	500.78	18.7%	
NEW_NORTH2	4.37	-	(0.01)	-	-	-	4.36	0.2%	
SOUTH	279.15	-	10.06	33.54	(1.97)	0.27	321.06	12.0%	South 20%
NEW_SOUTH1	99.33	-	5.40	14.41	92.92	0.27	212.33	7.9%	
NEW_SOUTH2	10.67	-	-	2.86	-	-	13.53	0.5%	
EAST	102.85	-	(0.74)	(3.23)	(41.51)	(0.75)	56.61	2.1%	East 11%
NEW_EAST	203.12	-	(0.00)	9.85	2.75	17.47	233.18	8.7%	
WEST	56.30	-	2.61	(0.02)	5.77	6.74	71.41	2.7%	West 44%
NEW_WEST	769.31	-	7.91	37.88	42.11	262.45	1,119.65	41.7%	
CANTONMENT	0.01	-	-	-	2.09	0.30	2.39	0.1%	cantonment 0%
<b>Built-up Area Difference by Type (Ha)</b>	<b>2,137.20</b>	<b>-</b>	<b>36.30</b>	<b>95.72</b>	<b>92.29</b>	<b>322.32</b>	<b>2,683.83</b>	<b>100.0%</b>	<b>100%</b>
Increase as % of total built-up	80%	0%	1%	4%	3%	12%	100%		
<b>Built-up Area Difference (Ha)</b>	<b>2,683.83</b>								
<b>% Built-up Gross (2000-2010)</b>	<b>14.47%</b>								

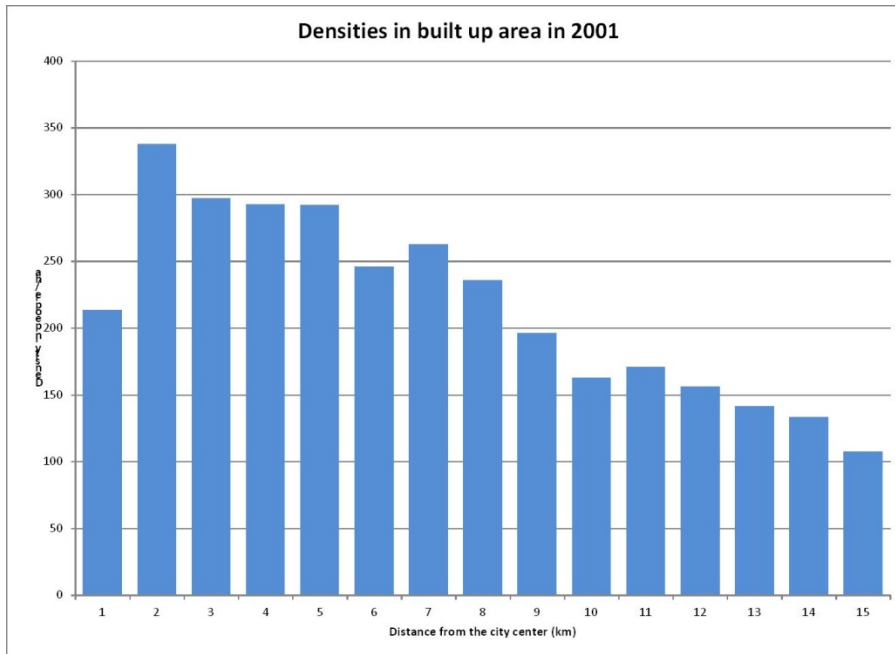
**Figure 2: Differences in land use between 2001 and 2011**

The spatial distribution of densities in a city has an important impact on labor mobility and transport efficiency. The map of *Figure 3* shows the distribution of population densities in built-up areas per ward. The distribution of densities present 2 anomalies: 1) the high densities areas are nearly exclusively to the East of the Sabarmati river and 2) the high density areas expand at more than 14 km from the center on the East side while the areas within 5 km from the CBD on the West side have relatively low densities. The east side has a lot of industrial and informal employment but most of the modern sector is expanding on the West side. This spatial pattern of densities reflects of course a form of income segregation between East and West. The effect of on the efficiency of transport might be large in the future, as a mass of workers and consumers would want to commute from East to West across the few bridges on the Sabarmati River. Unfortunately we could not have access to the ward level population from the 2011 census to know if the trend shown in 2001 had continued or reversed in 2011.



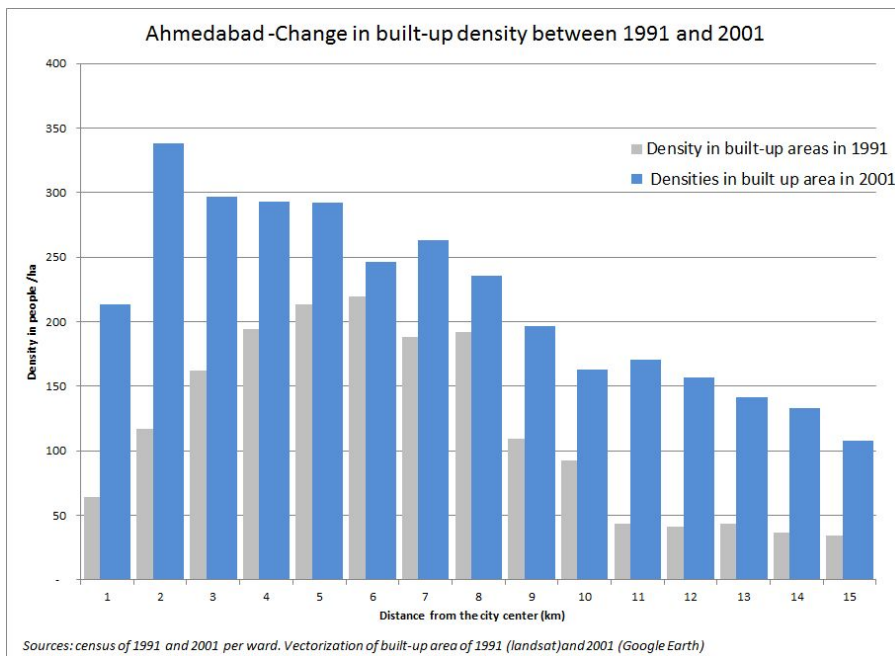
**Figure 3: Ahmedabad population densities in 2001**

The profile of population density in 2001 shows the traditional decrease in density from the center to the periphery although the profile would be very different if one was drawing a separate profile for the west bank and east bank of the Sabarmati river. The average built-up density in 2001 was 244 people/hectare and reached 262 p/ha in 2011. This increase in density with time is exceptional for large cities. In itself it may not be a cause of concern if the density pattern was more homogeneous between the 2 banks of the river.



**Figure 4: profile of population densities in 2001**

The comparison between the profile of densities between 1991 and 2001 shows the large structural changes that have occurred between these dates. There has been a large increase in the density close to the center. Mostly this densification has occurred in the old city, which densely built but not densely inhabited in 1991. The densification of the periphery has also been spectacular.



**Figure 5: Profile of population densities in 1991 and 2001**

## **Annex 5. Summary of Lessons from the Local City-Wide Assessment of Ahmedabad For Developing Strategies For ‘Slum Free Cities’**

**Any slum free city strategy should have two distinct parts.**

**The first step is to implement an immediate investment program to improve living conditions for all—with first priority given to in situ improvement of slums/challis and any other areas without basic services, coupled with supporting investments in the infrastructure network. Our study shows this approach is affordable, cost effective and can be implemented at scale if designed simply and pragmatically. Other solutions for affordable housing, such as in situ rehabilitation, government constructed housing, and reservations for low-cost housing are appealing to various constituencies for various reasons—but are necessarily limited in impact and scope. They are undersized in relation to the size of the problem in Indian cities.**

**The second essential step is to understand the underlying real estate market dynamics and the government’s role in driving up the cost of housing for all income groups. This initial assessment should be used to plan longer term steps, usually a combination of institutional and regulatory reforms plus investments, to reduce the pressure on land markets, facilitate individual and small developer entry in supplying legal, formal housing, and thereby create conditions for private market supply of affordable housing to complement government investments in this area.**

### **I. Assessing Investment Requirements**

- 1) It is important to identify all underserved areas rather than merely looking at ‘slums’. In India and other countries, slums may be subject to an administrative definition under the relevant legislation and in this context, slums may be interpreted to mean only those notified slums. Yet notified slums do not necessarily cover all substandard underserved neighborhoods in need of improvement, including recently established squatter settlements for example<sup>35</sup>.

---

<sup>35</sup> <sup>35</sup>Legal definitions typically make no reference to formality of land tenure in slums. For example Gujarat Slum Areas Act 1976 slums as :



In some cities, there exist other types of informal areas which may not receive formal infrastructure services and therefore may suffer from substandard living conditions due to lack of basic services. In the case of Ahmedabad, many of the challis, which were originally developed by mill owners as low-cost worker housing are not serviced with in house water and toilets for example. These challis may also include new informal settlements that have filled in open areas in the original challi development, so they are hybrids. In Ahmedabad, challis cover a very substantial area, comparable to that covered by slums. Leaving them out would ignore substantial underserved areas.

Gamtals are urban villages, ie village areas that have been surrounded by the city. They are considered legal developments and are formal in this sense, but many also lack basic infrastructure network services, and should be considered for improved services if cities are to be considered 'slum free'.

Finally, sidewalk dwellers and transit housing for workers house substantial numbers of households and services in these areas can be very poor. Solutions for these areas will not be the same as for established neighborhoods, since the population tends to be more transient. However such areas deserve further analysis and assistance as cities seek to improve living conditions for all.

Costings were prepared on the basis of market rates, not using government standard rates which tend to lag the market developments. The standard schedule of rates approach creates predictable problems for implementation and quality of works. In buoyant economies like Ahmedabad's such problems are likely to be acute. The difference between the two estimates was substantial.

- 2) Our consultations with civil society indicate that it is very important to examine the needs for upgrades of network infrastructure that services all neighborhoods and include these

(a) that any area is a source of danger to the health, safety or morals of the inhabitants of that area or of its neighbourhood, by reason of the area being low-lying, insanitary, squalid, over-crowded or otherwise; or

(b) that the buildings in any area, used or intended to be used for human habitation are—

(i) in any respect, unfit for human habitation; or

(ii) by reason of dilapidation, overcrowding, faulty arrangement and design of such buildings, narrowness or faulty arrangement of streets, lack of ventilation, light or sanitation facilities, or any combination of these factors, detrimental to safety, health or morals,

However in practice only squatter settlements with informal tenure are treated as slums.

needs for infrastructure upgradation in investment programs whose goal is providing universal access to basic services. A number of slums lack access to network infrastructure, particularly sewers. This diminishes the sanitation benefits of in house toilet facilities, and raises the costs of providing in house sanitation solutions. Other slums that have received in house water connections have experienced problems with declining water pressure as a result of expanding water connections and increased water usage. One can expect that this may also occur in surrounding neighborhoods. Such neighborhood shortages could lead to backlash against extending services to all households, undermine support for in situ upgradation, and increase pressures for relocation of slum dwellers.

Our estimates of the impact of providing basic in situ upgrading city-wide in Ahmedabad (based on analysis of trends in capital spending in the city) show that a five year improvement program is quite affordable for the city. An expansion of network infrastructure of an amount equal to the slum upgrading could be accommodated in the case of Ahmedabad. However, this may not be the case in all cities. This budgetary analysis should be performed to ensure that basic service provision through better connections to networks does not lead to shortages of water and sanitation services.

- 3) Our identification of locations of slums showed that a relatively large number of households were vulnerable to flooding due to location near a few large lakes. These slums are hence being considered for relocation. Such relocations could be much reduced through investments in flood protection at a lower financial and social cost than relocating these households into new housing.
- 4) We successfully tested the use of satellite imagery combined with selective ground truthing with the help of local NGOs for a comprehensive spatial identification of slum areas. This can be done through identification of typical physical characteristics of informal areas from the air, and then can be supplemented with local detailed population and household surveys typically available for a sample of slums. This quick assessment provides a broad gauged estimate of the total underserviced areas and population, and it takes considerably less time and energy than the detailed comprehensive household surveys that are typically requested of cities wishing to apply for support for slum improvement programs. Such a quick assessment can be used to assess broad feasibility at the city level and therefore avoid a long period of comprehensive surveying which may considerably delay the start of useful work by seeking unnecessary precision.
- 5) Satellite imagery can also be used to validate ground level surveys quickly. This helps to avoid errors that may creep in when surveying firms without specific knowledge of slums are asked to assess densely packed and crowded areas in a short period of time.
- 6) Ultimately this satellite imagery can then be used to guide detailed station surveys undertaken in with participation and validation by the communities themselves as specific investment plans are elaborated. These approaches have been tested in Ahmedabad and other cities in India. Detailed plans for slum pockets can be prepared individually and sequentially with much more accuracy than one survey which attempts to assess the magnitude of all requirements at one time. The fluid nature of slum communities is such that errors may be introduced and very poor quality data generated

when a once off comprehensive assessment is required. The notion that a precise once for all measure of slums is necessary and feasible can then create its own problems. As any attempted survey of this kind gets out of date, it becomes difficult to revise the 'official' estimate and respond accordingly.

## II. Making Implementation of City-Wide Improvements Faster and More Effective

- 1) Requiring that in situ upgrading be accompanied by provision of security of tenure, even limited as it was in the case of Ahmedabad, to a ten year no eviction guarantee, is an obstacle to the goal of providing universal access to basic services in poor neighborhoods. It makes the process harder and slower and beneficiaries do not always demand it. They have accepted to pay for service improvements even when they must sign an agreement stating that they may be evicted. The point is to be clear that services cannot be provided in their neighborhoods if formal tenure security is a condition.

In the Government of India (GOI) program for slum free cities, RAY, the government is asking all States to provide tenure to slum dwellers. This is seen as very impractical for a number of reasons to be discussed below. On the other hand, central public lands, where many slums are located all over India, cannot be upgraded, because the central agencies that own them refuse to allow any improvements to be made in these slums. GOI could be very helpful in negotiating with these agencies to adopt an approach similar to that used in Ahmedabad's slums. They should give their no objection to providing basic services for the health and safety of the population--even if they cannot provide tenure security. This could speed the path to improving living conditions in many of slum areas where now, not even public toilets can be installed due to objections of the central agencies in charge of these lands.

- 2) Providing tenure security makes it very complicated to provide services on privately owned lands, since private landowners are very likely to resist such a formal curtailment of their de jure property rights. Such tenure guarantees also make it more complicated even to provide services on public lands since all public landowners may not be able or wish to agree to such guarantees, as discussed above.
- 3) In Ahmedabad, problems were encountered once the 'no eviction' guarantee could not be honored in certain upgraded areas that got in the way of planned infrastructure improvements. This controversy tarnished the reputation of the entire program and eroded support for continuing the slum networking program (SNP). This is the case even though stakeholders we consulted believe that the SNP is the best way to improve living conditions quickly and effectively in challis and slums.
- 4) Providing tenure security also led to a number of other complexities that slowed down implementation. It added many layers of approvals and non-objections from city departments which did not add to the quality of project works, but which slowed implementation time. It also required individual beneficiaries to produce considerable paperwork for which is hard for the typical slum dweller to obtain. Thus the tenure security requirement slowed down project implementation. It ultimately did not protect households when the city needed the land on which they were living.

- 5) The tenure security requirement in the original SNP was laid down by the lender, not by any of the local sponsors of the project. The local government has continued providing services in slums without this requirement and has not experienced difficulties as a result.
  
- 6) The central government has recently introduced programs to support ‘slum free cities’ which include substantial components for new housing production, and PPPs which involve handing over high value land to developers with incentives such as additional FSI against provision of housing to those living in the slums located on that land, otherwise known as in situ slum redevelopment---in addition to funds for in situ slum improvement. The housing programs are in support of a promise to provide free homes of 270 sq ft. for all slum dwellers in the country. Such promises of free housing are unaffordable and cannot be implemented due to difficulties in obtaining large tracts of well-located land for building such housing. PPPs—at best—can only help only a small fraction of households in slums. The very additions to the formal housing stock which drive the private developer demand for such PPPs are infinitesimal in relation to the total number of households in slums.<sup>36</sup> Yet, these promises of free housing for slum dwellers create expectations which make it harder to implement a large scale slum upgradation program. To avoid creating perverse incentives to hold out for larger subsidies, government should send a clear signal that opting for neighborhood upgradation will not compromise eligibility for slum rehabilitation or allocation of subsidized EWS housing. The risks of duplication are small and can be managed.
  
- 7) In Ahmedabad, government has considerably increased its production of new public housing through subsidies from central government. Even this level of production will likely be just enough to meet demands for relocation of certain slums due to infrastructure development.
  
- 8) Providing universal access to services will be impeded by compulsions to plan for provision of free housing units as part of slum free city plans. Local governments will feel compelled to plan which households should receive new housing, which slum areas will be slated for in situ redevelopment, which will get new housing which may or may not actually come available, and which will benefit from in situ upgradation. Such a planning exercise will delay implementation considerably as pressures to slate different areas for different types of development will lead to protracted deliberations that have no obvious or simple means of resolution. Instead government should undertake in situ upgradation throughout the city as quickly as possible, while relocating households as and when necessary for infrastructure development.
  
- 9) Local governments will need to plan carefully for ensuring they can build and fund enough relocation units to meet the needs of any households that will be displaced due to infrastructure improvements. Then the process can take place in an orderly and dignified

---

<sup>36</sup> In Ahmedabad, new housing production per annum was 2.4 percent of the total housing stock, as opposed to nearly one third of the housing stock being in challis/slums. Roughly one tenth of that production was formal. That means that new formal housing amounts to about 0.24 percent of the total housing stock and less than one percent of the households in challis and slums today!

fashion for those unfortunate households—who deserve a well located home in compensation for displacement. Done correctly, these relocations will be a very small fraction of the total households living in slums. Government can then decide how to recover costs of building the relocation housing, ideally through the infrastructure project budgets themselves. This provides the proper incentives for evaluating and designing infrastructure upgrade.

- 10) The decision to consider rehabilitating slums in high value areas should be left to developers. It should follow market trends and be subject to the approval of the affected community. Slating an area in a government sanctioned plan as high value and suitable for redevelopment will effectively take away any bargaining power of the households in such slums and compel them to agree with the terms of the developers. If, instead, all neighborhoods are planned for in situ improvements, and priority is provided to neighborhoods that accept in situ upgradation as their preferred option, then there is very little risk of waste.
- 11) Organization of local CBOs, who work with approved NGOs or other groups for forming such CBOs has greatly improved the quality of implementation in the SNP. Slum upgradation programs in many cities are plagued by shoddy construction and implementation supervised by local governments. Without safeguards, there is considerable scope for exploiting the many disadvantages of slum dwellers in dealing with city administrations. CBOs and NGO involvement in the SNP served many practical purposes for minimizing such problems: keeping neighborhood households informed of their rights, giving them a role in supervising the quality of the works as well as the design of the program, minimizing demolitions and finding equitable, fair approaches to demolition. This worked because the participating NGOs were vetted carefully--in this case by a prestigious business school. Also the CBOs had control over key parts of the process. The individual household contributions mobilized by the CBOs were only released to contractors once the households and CBO approved the quality of the works.

For these reasons, it is critical to ensure the NGOs are paid enough to mobilize local CBOs. In the SNP, NGOs were expected to contribute 30% of their costs out of their own funds, and the allowable cost was substantially lower than the real costs of community mobilization. Such design weaknesses would undermine a program seeking to operate at a large scale. For Ahmedabad, we estimated that the organization costs for creating the CBOs and working with them throughout the upgradation process would be about INR 10,000 (US\$ 200) per household. This reflects market rates because if one is planning to complete a city-wide upgradation program over about five years, this would mean about 80,000 households per year. Working on that scale cannot be done on a partially volunteer or charitable basis alone.

The process of establishing CBOs should be kept simple. In the SNP, each member was required to qualify for a micro loan whether they needed it or not. The necessary paperwork slowed down CBO formation by months, and left out the many households who cannot provide this paperwork due to many obstacles placed in the way of obtaining such papers for groups such as migrants in cities. Most households did not want to pay interest on a loan and did not take them in spite of all the delays that were caused by qualifying for micro loans.

The household contribution should be substantial –in our consultations, the consensus was that, in Ahmedabad, households could pay INR 5000 (about US\$100) if spread out over the construction period. This represented 10 percent of estimated civil works costs. This requirement is needed to avoid abuses. When the household contribution is higher, contractors have a more serious incentive to provide quality works. If the amount the households can hold back against successful completion of works is only a token amount, then it is not that difficult for unscrupulous or incompetent operators simply to do shoddy work and forego this part of the payment.

- 12) Managing public relations well is a critical aspect of effective implementation, not just a nice add on. Households in slums are typically well informed and skeptical given how often programs do not deliver as promised. In Ahmedabad, CBO organization went much more quickly after some neighborhoods had been improved and prospective participants in the program could observe first hand what could be achieved. Therefore, it is essential to resist the technocratic temptation to plan out the full program before breaking ground. Starting work quickly in priority neighborhoods demonstrates commitment to results and will create momentum for organizing other communities. The small scale of neighborhood by neighborhood upgradation offers natural risk management. Any mistakes made in early upgradation projects can be corrected in later projects. Gains from learning on the job can easily be applied in later neighborhood upgradations. Even exhaustively planned projects suffer from execution and quality problems. Little evidence can be marshaled to demonstrate the benefits of comprehensive planning to be weighed against the costs of delay that such planning imposes.
- 13) A major in situ upgrading program will create large demands for human resources and administrative processing capacity within the city government for a limited time, as the many small neighborhood level projects are completed. Each one needs to be supervised and approved by city engineers, procurements of all kinds of materials may have to go through the central stores. Working through standard administrative procedures will create bottlenecks and slow down implementation. These bottlenecks were experienced in the SNP. Special arrangements are needed to create flexibility in implementation through special goods and works procurement measures, deputation premia, subcontracting for technical skills needed only through the life of the project, while ensuring protection of the public interest through strong governance. Many in Ahmedabad believe their Special Purpose Vehicle (SPV) model is a robust tool for achieving this.
- 14) Public relations with the broader community are equally important. Proactive professional promotion of the program should be part of the budget, to ensure that the program is well known and that the many benefits not only to participating households are well understood. The NGOs participating in the SNP documented the many benefits, but few outside the specialized circle of urban specialists know about the many positive social impacts of slum upgradation for the families involved and for integration of these communities to the city at large. Such promotion of the program will help to counter the negative impression created when something goes wrong. Those ‘bad news’ events will

always tend to be well covered by the media, and they can tarnish the concrete achievements of such programs. Local language media are often a substantial and overlooked resource in creating justifiable civic pride in the achievements of a well thought out program. Slum upgradation is not glamorous and does not lend itself to large ribbon cutting ceremonies. Yet it touches lives in a very significant way. Pursuing the personal angle of how a family's fortunes can change with neighborhood improvements may be a very productive avenue for public relations efforts.

### **III. Preparing a Basic Real Estate Market Assessment**

- 1) The first step in a real estate market assessment is to understand the demand side of the market. The National Sample Survey (NSS) in India has recently published data on household expenditures for 2009/2010. These can be used to create a distribution of household expenditures by expenditure class for most Indian cities. While such survey data has its drawbacks and imperfections, this is nonetheless an excellent resource for understanding purchasing power and how it varies in different cities. This data can then be used to assess affordability of housing types for lower income groups and the middle class using simple rules of thumb relating monthly expenditure to an affordable home purchase price. These figures for different expenditure classes can then be compared to the costs of different types of formal housing. In the case of Ahmedabad, for example, we found that between 40 percent and 50 percent of households in the city cannot afford the lowest cost reasonably located formal home.
- 2) Google Earth® was used in this study for locating and measuring various types of informal housing. For a knowledgeable viewer, it is possible to identify illegal colonies and substandard housing types. The extent of neighborhoods of these and other types, once identified can be translated into GIS programs to understand the composition of the housing stock as well as overall land use patterns. Historical images in Google Earth® (starting in 2001) can also be used to estimate the increments to housing stock amongst all categories. This avoids the bias introduced by examining official records of building approvals etc., which are hard to get and only cover formal housing, a fraction of increments to stock. To estimate populations living in different types of housing, slums for example, one can use detailed surveys of a sampling of slum neighborhoods. These are almost always available in some form. Then the data can be used to extrapolate and obtain a reasonable rough number of households in slums or other substandard informal housing. Ground truthing is essential to validate classifications and number of units per land area derived from satellite photos, but the combination of the two is very powerful.
- 3) Given that we now have census data from 2001, the start point of Google Earth® photography and from 2011, it is possible to look both at housing stock and populations changes and therefore analyze changes in land use and density patterns. In Ahmedabad, this enabled us to observe a shift of high density housing into the suburban areas while the lowest density areas remain in the city center. This is indicative of arbitrary constraints in the highly desirable city center areas. It also shows a general constraint on land as new built up space even in far flung areas is developing at exceptionally high densities. International research shows that all over the world, when incomes grow as they have in Ahmedabad, built up densities typically decline as people opt for and can pay for more open space and individual homes. Just the opposite is happening in



Ahmedabad as builders and home buyers even on the high end are economizing on land. The Google Earth® analysis also allowed us to observe the highly fragmented and sprawling development. (Clarification: built up space densities are high, but overall land use density is sprawling since there is a good deal of empty space among built up areas—again a symptom of problems in the functioning of the land market.) This type of land use pattern without a dense city center will make public transport expensive and ineffective.

- 4) Estimating changes in the housing stock of different types through our Google Earth® analysis allows an assessment of the supply response capacity in the formal Ahmedabad real estate market. The housing stock in total grew at 2.4 percent or roughly 50,000 units per year. Based on government housing production data, for example, we were able to estimate that government housing after accelerating rapidly under GOI funding (JNNURM) still only accounts for about one fifth of total housing production. Slums and urban villages account for nearly half of annual housing production. The remaining 30 percent of housing production is a mix of formal housing and illegal colonies of higher quality. This illustrates that total private or public production of formal housing is quite small. Even if all new formal housing went to poor households—clearly an overestimate—it would still take a generation or more to rehouse the 422,000 households in slums.
- 5) Working through the numbers shows that neither public housing nor reservations on private formal housing can improve the living conditions of more than a small fraction of slum households. Improving the lives of people in slums must include measures to reduce the legal burden of living in a slum, improving the physical environments in slums, and reducing the very high hurdles of shifting from slums to formal legal housing. Any strategy for slum free cities must embrace multiple solutions that offer incremental gains to many households. Moreover, the problem cannot be solved only with government building programs. Structural constraints lead to situations like Ahmedabad's where almost a third of the city's households are in substandard illegal informal housing. Understanding and addressing these constraints is essential to long term improvements, and the city-wide real estate market assessment is a starting point in identifying the issues and possible solutions.
- 6) The land use analysis pinpointed a number of symptoms of structural problems amenable to government action. Densification away from the city center, the most desirable part of the city indicates that development there is constrained by such policies as low FSI and high costs of redevelopment. (On redevelopment costs, see discussion below on property rights and land tenure). Together these prevent increases in the supply of housing and commercial space where it is most desired.

Fragmented development at the periphery, failure to develop lands already zoned as urban areas, and a large backlog of approvals for conversion of tenure on specific plots for urban use and regularization of titles---all in the face of rapid real estate price increases--indicate important institutional obstacles to supply of land for newly built space even at the periphery. The high density of development that does take place at the periphery shows that private suppliers are economizing on a scarce and expensive resource.

- 7) Discussions with developers working at all levels in the market as well as private individuals seeking to invest in their properties provided more detail on the issues.
- i. Developers at the periphery encounter a very complex, time consuming and unpredictable procedure for regularizing title to most newly built space. This procedure must pass both through the Revenue Department and other offices at the State level and through the city level authorities regarding building permissions and standards. Because this process requires good contacts and specialized knowledge, it is difficult for small developers or individual farmers to obtain the necessary permissions. The complexity of the processes thus reinforces the existing market power of a few large developers while also constraining overall supply and increasing the actual costs of producing built space. These uncertainties and complexities likewise bedevil redevelopment within the city.
  - ii. The risks and complexity of these processes are underpinned by the profound ambiguities in land tenure and ownership. Unless a plot of land has been purchased from a government agency, which guarantees unambiguous property rights, making any major investment on the land entails considerable risks. It is virtually impossible to ascertain how to clarify title without engaging in a costly, time consuming process for each individual plot. At the end of that process, it is quite likely that a prohibitively costly solution of demolishing all existing structures and paying large fines is the only way forward to investing in improvements. This costly step would be a pre-requisite to seeking clean tenure from the state—but offers no guarantee that tenure could be given. Such requirements prevent all but those for whom cost is no object from engaging in the process.

Our investigations in Ahmedabad suggest that these problems affect all income groups, but they tend to affect lower income groups disproportionately. This is due to an overhang of past regulatory measures that may even have been repealed. If in the past, government placed a reservation on the plot, for example, due to the land ceilings limitation, or for use for the green belt or public housing, the owner might start litigation to contest this reservation, thus freezing land during legal proceedings (which can last 20 or 30 years). Meanwhile since his land use became irregular, the only means of getting value for the land is in grey market transactions, such as powers of attorney or irregular sales using government stamp paper but conferring no transfer of property rights. Land transacted this way is much less costly and well informed and well heeled buyers may be able to avoid taking these risks. For the poor, this steeply discounted land offers them some access to land, while they may not understand how deeply compromised these rights are or simply cannot afford land with better title.

- iii. Our land use analysis provides some confirmation to this hypothesis. After 2001, the development plan abolished new reservations and the Land Ceilings Act was repealed. No new lands were taken as a result. Likewise, we observe that the lands occupied by challis/slums have broadly stabilized since 2001. Growth in the numbers of units in challis/slums has been achieved through densification. Discussions with NGOs and finance institutions working in Ahmedabad have also

indicated that many low-income households in low-cost informal areas face such difficulties with land tenure.

- iv. Tenure problems could be resolved for many more lands if fast track, non-adversarial systems to unlock compromised land assets are created along the lines of bankruptcy procedures. Such an approach offer a rules based means of resolving the competing claims that make land tenure issues so intractable while freeing up land for investment and formal housing finance. This approach must also show flexibility for grandfathering existing buildings even if not up to city standards, provided basic health and safety requirements are met. This alternative to the punitive costs of building regularization and court cases could be undertaken on an incremental and voluntary basis, as were town planning schemes, with safeguards to protect poor and less informed household interests.
  - v. Discussions with low-cost developers, NGOs, and our survey of housing patterns in Ahmedabad also indicate that high standards for formal housing enshrined in the city's development regulations make requirements that impose very high costs on any household wishing to own a legal home—standards that are affordable to a fraction of the population, and only then if the family can move to a relatively distant suburban area. These standards are not met in the vast majority of the housing stock in Ahmedabad. This is true not only of challis and slums but of colonies all over the city. Thanks to the provision of backbone road infrastructure, many of these colonies are well laid out, well serviced by infrastructure including roads, and offer decent living conditions meet local cultural norms, and are affordable for lower and middle-class households. Our inventory shows that these are a very common housing type in the city—clearly a popular choice the small-scale developers have refined over time. But new housing built to these norms is illegal and therefore remains in regulatory limbo until government decides to provide services and regularize the structures. Allowing flexibility to build to these 'vernacular' standards and regularize many of these neighborhoods offers scope for increasing the supply of genuinely low-cost affordable housing.
- 8) In consultations, considerable concern was expressed regarding the impact of reforms on the concentration of the developer industry and the scope for capture of benefits of piecemeal poorly designed reforms. The current system, because of its complexity and risks, favors a small group who know how to navigate the system. Reforms that 'liberalize' should ensure that the system that results is more easily accessible to developers and households wishing to build on their own. Without more competitive entry to the developer industry, there is a risk of capture of reforms. However, reforms that make competitive entry are quite possible through simplification of the highly complex systems that now characterize land management all over India. In Ahmedabad, the development authority made entry into land auctions more open and competitive by lowering thresholds for entry. Similar gains can be achieved in land use policy, and a concerted process of seeking out such approaches should be engaged.