

Chapter 3

Generations of Migrants and Natures of Slums: Distress, Vulnerability and a Lower Middle-Class in Bengaluru, India¹

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Indian Slums: The Bigger Picture

Expanding slums in India's growing cities are attracting increasing official and scholarly attention. For the first time, in 2011, the Census of India undertook a separate enumeration and listing of people in slums², adding to prior knowledge (e.g. NSSO 2003; 2009 and GOI 2010) about the likely numbers of slums and slum dwellers. The 2011 census data reveals that while the absolute decadal growth of population across the nation was 17.7%, the increase in urban population was 31.8%, demonstrating a rapid phase of urbanisation. From 17.3% of the total population in 1951, the urban share has risen to 31.2% as per the 2011 Census (GOI 2013). It is expected to rise further on account of three separate trends:

1. **Urban incorporation:** rural areas re-classified as urban (because of increases in the numbers and densities of population, accompanied by a reduced dependence on agriculture). A total of 2,772 formerly rural areas were reclassified as urban between 2001 to 2011,
2. **Rural-Urban migration:** Large scale migration of people into cities, especially large agglomerations. (Towns with more than 100,000 population account for 70.2% of the total urban population), and
3. **Natural increase:** Due to the increase of the population in cities, as birth rates outpace death rates.

The above trends are putting pressure on the larger cities, exacerbating the twin issues of urban poverty and urban sprawl. This migration is not only a result of the ongoing fragmentation of land holdings. Increased volatility in yields (as a result of climate change impacts e.g. drought or erratic rainfall) and prices (because of the incursions of global price effects into rural areas) are making it more difficult to maintain a reliable and steady living in rural areas. Climate change and agrarian distress therefore induces the movement of the most vulnerable sections

of the rural population into large cities. Part of the urbanisation story is represented by a phenomenon of *urban primacy*, where a single city in a province, such as Bengaluru³ in Karnataka, accounts for a significant portion of the overall urban population of the province (Henderson 2005).

As cities (particularly the biggest ones) are growing, slums are growing faster still. Despite this, little is known about the lives of people living in these settlements. Problems of definition, methodology, and interpretation collide to create this knowledge gap. The Indian situation, which we discuss below, exemplifies conceptual and practical obstacles noted elsewhere (Mitlin and Satterthwaite 2012; Marx et al 2013; UN-Habitat 2014). Whilst relatively broad, the official definition of a slum (as per the Census of India) is broken down into three categories (listed below) which inform the enumeration process:

- I. 'All notified areas in a town or city notified as 'Slum' by State, Union territories Administration or Local Government under any Act including a 'Slum Act' may be considered as *Notified slums*'
- II. 'All areas recognised as 'Slum' by State, Union territories Administration or Local Government, Housing and Slum Boards, which may have not been formally notified as slum under any act may be considered as *Recognised slums*'
- III. 'A compact area of at least 300 population or about 60-70 households of poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lacking in proper sanitary and drinking water facilities. Such areas should be identified personally by the Charge Officer and also inspected by an officer nominated by Directorate of Census Operations. This fact must be duly recorded in the charge register. Such areas may be considered as *Identified slums*' (GoI 2013).

Not all government agencies follow the Census definition. The Indian Ministry of Housing and Urban Poverty Alleviation (MHUPA), following the definition adopted by the National Sample Survey Organisation (NSSO), considers a slum to be 'a compact settlement with a collection of poorly built tenements mostly of a temporary nature, crowded together usually with inadequate sanitary and drinking water facilities in unhygienic conditions. Such an area, for the purpose of this survey, was considered as a 'non-notified slum' if at least 20 households

lived in that area' (GOI 2010: 3). This difference in the qualifying criterion – 20 households per NSSO and 60-70 households in the Census have led to divergent estimates of people in slums. While the NSSO and MHUPA estimate that 16.5 percent of the urban population in the state of Karnataka live in slums, the corresponding figure provided by the 2011 Census around 12 percent.

Along with uncertainty about the 'true' size of the slum population, another complication emerges when slums are assumed to constitute a homogeneous category of settlements, or when differences are examined only in terms of the gross distinction between notified and non-notified settlements. For example, the description contained in the opening sentence of the MHUPA's understanding of slums as 'poorly built tenements mostly of a temporary nature' may not apply to many settlements notified as slums. Once a slum is notified, it could take multiple trajectories depending on the ownership of the land, and type of intervention that the state chooses to implement. For example, there could be resettlement of the slum dwellers in new apartment blocks located elsewhere, in-situ development providing superior housing, or a handover of property rights so that the dwellers can develop the housing themselves without fear of eviction. Therefore, even within the category of notified slums we see a range between 'poorly built tenements mostly of temporary nature' and multi-story concrete buildings. Since the statute does not have a provision to de-notify a slum (even when it has been transformed through state intervention into multi-story buildings), many continue to be listed as slums when there is nothing 'slum-like' about them. At the other extreme, there are settlements (often located alongside notified slums) that look very temporary in nature, with flimsy materials (e.g. blue tarpaulin) as the only protection from the elements, and very few (if any) municipal services provided. In this chapter we distinguish this type as 'first-generation' slums, compared to the notified, recognised or identified slums.

Significant differences characterise the lived experience within slums of different types, and these differences are poorly captured by the gross distinction between notified and non-notified. Whilst notified slums differ from one another depending upon their age and location, even larger differences can be found between 'non-notified' slums. Policies that do not take these distinctions into account are unlikely to be helpful or cost-effective. Even when a slum is notified or recognised (through identification by census or NSSO enumerators) the spatial boundaries of these settlements are not plotted on city maps, making it impossible to know where a particular slum is located, where it begins and where it ends. Slums sprawl over time, stretching the original boundaries. Dwelling spaces acquired in these processes of spatial

extension remain in legal limbo, subject to political bargains. Other slums, particularly the flimsiest among the non-notified, are simultaneously dismantled or relocated. As a result, the dynamic landscape of slums remains ever changing and without any firm basis for formulating plans of urban renewal.

Finally, the lack of longitudinal information⁴ about these settlements makes it difficult, if not impossible, to respond to basic questions such as - have people who moved into slums improved their living condition over time? Or, has moving to cities made people, by and large, upwardly mobile? There are no studies (to date) tracking slum households to ascertain if their economic positions, access to services and living conditions have improved or deteriorated over time. These aspects are virtually unknown. As a result, it is hard to ascertain whether particular sets of policies have helped or hindered the urban poor.

Broad characterisation of slums across India

The 2011 enumeration indicated that over 5.4 percent of the Indian population live in slums (GOI 2013a). As most slums are located in urban areas, this figure is much higher in towns and cities, at 22 percent. Of those living in slums, around *one-third* live in notified slums, while the rest live in recognised or identified slums. While the notified and recognised slums are documented in government records, identified slums have limited/no documentation (GOI, 2013a). Table 3.1 outlines basic statistical data from the slum census, with a particular focus on the demographic characteristics of the slum population. As indicated, the proportion of scheduled castes and tribes in slums is greater than in urban centres overall, the literacy rates are lower, and a higher proportion report their occupation as agricultural labourers. These numbers require nuanced examination, particularly if the context of distress-induced migration from rural to urban areas.

<TABLE 3.1 HERE>

In the case of Karnataka, the Census lists 206 cities and towns as having slums. The largest number of slums and slum residents were concentrated in the largest city, Bengaluru, formerly known as Bangalore. The population of Bengaluru grew by 47.18 percent between 2001 and 2011. Of the three causal processes noted above 33 percent of this urban growth was on account of jurisdictional change (reclassification of villages and their incorporation within Bengaluru), 22 percent on account of natural growth, but the largest share of the increase, 45 percent

accounted for by in-migration (JNNURM 2006). The 2011 Census also recorded that Bengaluru had 165,341 households with a population of 712,801 residing in slums (GOI 2013a). This number represents 7.4 percent of Bengaluru's population, and 22 percent of the total slum population of the state of Karnataka (GOI 2013b).

If we apply the principle of primacy, then we can see that Bengaluru, the capital city of Karnataka State not only has a significantly high population in slums (compared to all other cities), but also a higher growth rate and proportion of in-migration. Bengaluru accounts for 36.05 percent of the urban population of the state, and 15.75 percent of the total population (NIUA and JNNURM 2011). Unlike the all-India numbers, where about a third equally live in notified, recognised and identified slums, according to the 2011 Census (whose numbers are widely regarded to underestimate the true extent of slums), in Karnataka the proportion of people living in notified slums was more than twice as high at 69 percent. A smaller proportion of 13.5 and 17.5 percent of the population were living in recognised and identified slums respectively.

When we examine the demographic details of slums in Karnataka and Bengaluru (Table 3.2), some key features emerge. The literacy rates in slums in Karnataka are significantly lower than the average for urban Karnataka, and the rates for Bengaluru are marginally better than the average for slums, but significantly lower than the urban averages. The relative proportion of scheduled caste and scheduled tribe populations to the total population in the urban areas are lower, indicating that a relatively larger proportion might be stuck in their rural settings. However, when we look at the sections of population in the slums, we find that these vulnerable caste groups have a disproportionate representation as 'first generation' migrants in slums.

<TABLE 3.2 HERE>

Research and methodology⁵: First-phase

Whilst the 2011 Census provided useful data, significant knowledge gaps remain about slums in India and Bengaluru – the focus of this study. To fill these gaps, a research project commenced in 2010 in Bengaluru with the support of the non-profit agency - Jana Urban Foundation (see Krishna et al 2014 for further information). The study focused on 14 slum settlements randomly selected from the extensive list of notified and recognised slums provided by Karnataka Slum Development Board (KSDB). These settlements were far from the official definition of slums as 'poorly built tenements mostly of a temporary nature, crowded together

usually with inadequate sanitary and drinking water facilities'. Depending on the type of intervention by the state, we found permanent constructions, with electricity connections and piped water supply commonly available. Residents here were firmly anchored within the city economy, yet mostly in the informal sector. Poverty was low in comparison to the average for the city, with 14 percent of residents reporting incomes below the official poverty line, as against the figure of 26 percent estimated for urban Karnataka.

In terms of income and poverty prevalence, these slum dwellers were located below the middle of the city's economic distribution, constituting Bengaluru's lower-middle classes. Initial surveys in 2010 revealed that television sets, pressure cookers, and electric fans were the most common asset types, with more than 80 percent of all slum households reporting ownership of each type. Kerosene or gas stoves were owned by nearly every household. Another commonly possessed asset was a mobile phone, possessed by more than two-thirds of all slum households. Investment in education ranked alongside home ownership as these households' highest spending priority. Yet, few children studied beyond high school (Krishna 2013). Crucially, hardly anyone in these slums was a new migrant to Bengaluru. Out of 152 households interviewed only 10 percent were 'first-generation' migrants. Even these migrants were not recent arrivals from rural areas, but had lived in Bengaluru for an average of 18 years. On the other hand, the largest number (1,011 or a little more than 70 percent of all respondents) had lived in Bengaluru for *four or more* generations. Knowledge gaps still remained, therefore, about the lives and livelihoods of so-called 'first-generation' migrants in Bengaluru's slums.

Finding and understanding first generation migrants

Despairing of the poor state of knowledge about Indian slums, many investigators have turned to using remote sensing techniques to deliver accurate and reliable data⁶. This ongoing study in Bengaluru relies similarly on Google Earth images compared over a ten year time frame with the objectives of:

- (a) Identifying low-income settlements and detecting newly arisen slums,
- (b) Tracking changing slum boundaries, and
- (c) Distinguishing between slum types.

As home addresses within slums (even longstanding ones) are notoriously hard to locate, with street names and alignments changing frequently, we are additionally:

- (d) Geo-referencing sample households within slums with the intention of revisiting these households at regular intervals and constructing longitudinal data bases.

Using this method, the exercise of identification began by drawing the spatial borders of the area administered by the municipal authority, the *Bruhat Bengaluru Mahanagara Palike* (BBMP)⁷. This area was divided into four evenly-sized quadrants on Google Earth (going counter-clockwise from the northeast: Quadrant I, II, III, and IV) and using the "ruler" feature to find the midpoints of each line segment and the "line" feature to draw the quadrant boundaries. We could then take each quadrant separately and analyse a more manageable number of identified settlements (polygons) at a time, enabling ground verification quadrant by quadrant. It is critical to compare settlements at the same height level on Google Earth. We determined that an altitude of 4,000 feet was appropriate, and used it in all analyses of Google Earth images. The following criteria were used to identify slums of varying types:

- Lack of space between blocks⁸
- Roofs that appear to be low-quality based on brown or weathered grey colouring
- Hodgepodge pattern of blocks clustered together without organization
- Lack of proper roads (if there are roads, they are brown, narrow and unpaved)
- Lack of shadows coming from the blocks, signifying that they are low to the ground, thus not multi-storey.

Based on these criteria, 279 low-income polygons were initially identified. A unique name was provided to each polygon based on the nearest populated place or water body, so that it could be easily identified in the future and verified on the ground. Iterative ground verification exercises led to continuous improvement in our ability to accurately delineate low-income and very-low-income settlements. Some of the notified slums that were of higher living standard were excluded in this exercise. Successive iterations revealed that the most important criteria for determining whether an area was low income were; small block sizes and lack of space between houses. Supporting criteria also included; unpaved roads, if they are visible, narrow inner roads (if visible on these images) and brown roofed blocks.

Interestingly, field visits and neighbourhood surveys also indicated that these settlements *did not* represent new migrants into the city. While they were not as well settled as the notified

slums studied initially, they had existed for multiple years with various stages of intervention from the state, including a notification in some instances. Despite this, the research team was determined to locate and find more about the most recent ‘first-generation’ migrants.

Based on these field visits, the research team identified that new settlers lived mostly in temporary settlements, and that the colour of the rooftops were rarely brown. Homes within these newer settlements were in general covered by blue plastic sheets (referred to as tarpaulins, but made of plastic based material)⁹. The recurrent observations that temporary settlements tended to have blue-coloured rooftops provided us with a different set of criteria for identifying the poorest settlements. In exploring these settlements, we used the time slider feature on Google Earth and noticed that these settlements had come up largely in the past few years. Some, however, had been around for much longer, growing in size over the ten-year period observed. The criteria we used for identifying these first-generation settlements on the satellite images were; small block size, blue rooftops and recent establishment. The comparison of ‘before’ and ‘after’ satellite imagery indicated the rapid pace of transformation¹. [Figures 3.1a to 3.1c exemplify how this type of settlement was identified](#)

<FIGURES 3.1a to 3.1c HERE>

The research team identified 61 such settlements. Ground-verification revealed that initial identification was accurate in the vast majority of cases. A total of 8 settlements no longer existed, perhaps because they had relocated, or were temporary construction sites hosting workers. In turn, we could not identify newer settlements as the satellite image data went up to 2011 only¹⁰. As expected, first-generation slums (or blue polygons), were found to be areas where recent migrants from rural areas, mostly northern Karnataka and the adjoining state of Andhra Pradesh would reside. Residents of these slums retain strong links with their native villages, going back and forth often, with families sometimes split between the two locations. Reasons for coming to the city were mainly agrarian crises (brought about by drought and erratic rainfall), and a consequent need to pay off accumulated debts.

The typical abode in a first-generation slum is a 7’x7’ tent erected on land hired from a private owner. Families of between three and five people share these small spaces, with the adult male and female both employed most often as construction labourers. Some sites, pending the grant

¹ [The Google earth images showing the changes in the satellite imagery is available on a website dedicated to this research at \[www.urbanindiastories.com\]\(http://www.urbanindiastories.com\)](#)

of building permits, instead of lying vacant, had been let out temporarily to migrants, thus earning rent for their owners. The monthly rental fee for one of these tiny plots in blue polygons ranged from Rs. 200-400 (approx US \$3-6), with migrants from further afield paying considerably higher amounts. These amounts are paid in advance in cash. None of the sites surveyed were ‘encroachments’ on public or government owned land (a common misconception), which is a significant departure from the stories of large well settled slums. While there are instances of older larger slums on private land, in general, such slums emerge on government owned land, either adjacent to an open drain, railway line, below high tension wires, military defence, forest and other land types.

Research and methodology: Second-phase

During the second study phase (August to December 2012), we undertook detailed investigations in a randomly selected sample of 18 first-generation settlements of this type, conducting interviews with a total of 631 households, a little more than half of all households in the settlements. Households were randomly selected for interviews (i.e. every second household starting from a common point) although in a few cases these protocols were broken, since contact with some households proved impossible despite repeat visits.

On average, 70 households, most having migrated from the same rural village or adjoining group of villages, constitute a first-generation settlement, with settlement size ranging from 10 to 150 households. About 40 percent of households came to Bengaluru between one and five years ago, and another 40 percent had been in the city between five and ten years, with a smaller proportion (about 15 percent), having stayed in Bengaluru for more than ten years. Crucially, more than 80 percent cited droughts, debt, and the general difficulty of making a living in their native villages as the reason for migrating to the city.

Prior to migrating, the principal occupation of 52 percent of residents was agricultural labour. Another 40 percent farmed small plots of land, supplementing these incomes with farm or off-farm labour. While primarily agrarian in origin, as many as 38 percent of these households did not own agricultural land of their own, another 34 percent owned tiny plots of between one and three acres, with only 7 percent owning five or more acres of agricultural land. When we compare this with overall numbers for Bengaluru and Karnataka, as well as our 2010 study, it is evident that these residents have a greater connection with their native village and are still

connected to agriculture. A larger number report cultivation and agricultural wage labour as their occupation, have identity papers in the native village, and are indebted to sources in the village. Unlike the larger well developed slums, these residents are not fully connected to the city, in spite of spending more than 5 years in Bengaluru.

A large majority of these residents (72 percent) belonged to Scheduled Castes (SCs), the former ‘untouchables’ – more than three times the share of this group in the population of Bengaluru – and Scheduled Tribes (STs) or India’s aborigines, constituted another 11 percent. Other Backward Castes (OBCs) made up 7 percent of this group. In 8 of the 18 selected neighbourhoods, SCs constituted 100 percent of the settler group. Table 3.3 outlines the caste divisions for all 18 neighbourhoods. Crucially, the statistics are in stark contrast with the proportions for general population, as well as population in larger more developed slums, indicating that distress and vulnerability induced migration affects these poorer groups to a higher degree.

<TABLE 3.3 HERE>

Caste backgrounds together with prior occupations and land holdings show how this group of households has arisen from among some of the poorest people in rural India, impelled to move from their native villages by diminishing economic prospects linked in the longer term to fragmenting landholdings, and in the immediate term by debts and droughts. This is further reinforced when one considers other aspects of lifestyle including asset holdings (Table 3.4). As indicated in Table 3.4, there are few possessions within the 7’x7’ tent dwellings compared to the notified slums. Clothes were usually stored on wooden planks balanced atop brick or earthen supports, a few battered aluminium cooking vessels, an open wood-burning *chulha* (fireplace) for cooking, a mobile phone, pictures of Hindu gods and goddesses, and one or two plastic containers in which water, brought from afar is stored are typically found within the dwelling.

<TABLE 3.4 HERE>

Blue-polygon settlements exist in an institutional limbo, unconnected to city services and economic opportunities. None of the 18 settlements were connected to the electricity network, and not one was served by street lights. Muddy, narrow unpaved alleyways and the frequent presence of stray dogs made it imperative to complete household interviews before dark, immediately after householders returned from a day of work. Regarding water, a hand-pump

was found in one neighbourhood and a bore-well in another. However, residents of the remaining 16 neighbourhoods had to purchase water from mobile tankers or travel great distances to fill up at public water points. Garbage removal and security services were non-existent. The nearest public bus stop was located within one kilometre of only two settlements, and is more than three kilometres away from another nine. The nearest health clinic (government or private) was on average four kilometres distance away. There are no signs visible in any neighbourhood of any government, Non Governmental Organisation (NGO) or other outside support. Residents mostly relied on immediate family members and neighbours, with only a tiny percentage able to call upon support from employers, community leaders, government officials, political parties or NGOs.

80 percent of male and female household heads worked on construction sites as irregular, daily-waged labourers with men earning on average Rs. 300 for each day's work and women earning lower amounts (around Rs. 200) in the same job. Prospects for advancement and permanence were severely comprised on account of frequent absences (often caused by illness), occasioned by visits two or three times a year to one's home in the native village. Such visits are necessary to look after the land and family left behind in the village and to service the debts that originally brought one to seek work in Bengaluru. A great deal of expenditure was incurred on home visits and on monthly debt repayments. Table 3.5 shows the distribution of average monthly expenditures for these blue-polygon households. More than one-quarter went towards obligations connected with the native village, with 16 percent going towards debt repayment and another 12 percent towards travel and remittances. The average household sends a sum of Rs. 1,840 (approx. US \$18) to the native village every month. Many households stated that debt repayment in the village limited their chances for self-improvement in the city. Note, for example in Table 3.5 that only a tiny proportion of household budget (4.8 percent) was spent on education. In fact, only 21 percent of all 631 households spent any amount on tuition, fees and other school-related expenditures. Very few children went to school.

<TABLE 3.5 HERE>

As many as 77 percent of all household members aged 14 years or older had no formal education, having never been to school. Those who attended school did so sporadically, often dropping out after a couple of years. No more than 4 percent attended English-medium schools, an important point of difference with notified slums, where the vast majority of young people attended schools regularly, with more than 60 percent educated in English-medium schools.

The itinerant life lived by residents of blue-polygon slums or ‘tented cities’, makes it harder to keep children in school.

Lack of official identity papers for residents of these settlements is a further barrier to social and economic mobility. The papers that blue-polygon residents possess are related to residence in their native village. Only a tiny proportion were registered as a resident of Bengaluru. Thus, while 69 percent had a Voter ID card in their native village, fewer than 9 percent were registered to vote in Bengaluru. Similarly, 65 percent had a ration card issued in their native village, but only 6 percent had one in Bengaluru. The corresponding proportions for a Unique ID (or *Aadhar*) card are 17 percent and 1 percent respectively. Access to basic services (e.g. health and education) was significantly hampered by lack of official documentation. As we can see in the next section, the situation was very different in notified slums.

Arguably, the lives of first-generation slum residents are doubly precarious. They are exposed to risk in two places – in the city and native villages. Along with droughts and rainfall failures associated with climate variability, deaths, marriages and health incidents combine to deplete the households’ minor savings, fuelling a loan-debt cycle. A total of 447 households (71 percent) reported experiencing a health incident requiring substantial expenditure during the preceding year, incurring (on average) an expense of Rs. 30,285 (approx. US \$460). Expenses on marriages added more than Rs. 100,000 (approx. US \$1500) over the prior five years to the outstanding debts of 391 households (62 percent).

Whilst the threat of eviction is also ever present in these settlements, some had been in place for ten years or longer, with the average age of settlements being 6.5 years. In contrast, notified slums generally represented higher livelihood opportunities and service provision, with many residents becoming part of a lower middle class - a result of incremental gains won through a series of political and official accommodations.

Conclusion

The population of urban slums in India has been expanding rapidly. Two interrelated processes, with different internal dynamics and consequently diverse repercussions for policy, have contributed to this growth. One reason for the increase is natural process i.e. births outpacing deaths. This process is most prevalent within longer-established slums, and particularly visible in our surveys of notified slums, where the majority of residents (more than 85 percent) were

born within the slum, and continued living there, incrementally building better lives and accumulating assets.

The second reason, and the focus of this study, is the longer-term diminution of economic prospects in agriculture coupled with the lure of growing cities (Reddy and Mishra 2009), plus factors associated with changing climatic conditions i.e. heavy rainfall and drought. These processes bring first-generation migrants into the newest and flimsiest settlements, where poverty, uncertainty, risk, and vulnerability are more centrally implicated in people's lives and livelihoods, and where resilience is much lower in comparison to notified slums. The largest proportion (81 percent) of our blue-polygon interviewees stated that their principal reason for coming to Bengaluru was related to the increasing frequency of rainfall failures resulting in droughts, difficult working conditions in the village, and accumulating debts. As climate change further raises the precariousness of rural livelihoods, the number of these settlements could rise.

Residents of these blue-polygon slums in Bengaluru have no official documents and no fixity of tenure. They are liable to be evicted, as many of our interviewees had been, with very little notice. Given these circumstances, these families aim not to build a better life within Bengaluru, but to use Bengaluru as a means for paying off the debts that they have contracted back in the village. Children's education is a lesser priority in the face of other more compelling and immediate commitments. Home improvements are neither feasible given the shortage of income following remittances, nor desirable in situations where the threat of eviction is ever-present.

These situations contrast starkly with those experienced by native-born Bengalurians living in notified slums. Home ownership and children's education are the two highest priorities of people living in the settlements. There is no imminent threat of eviction, and the need to send remittances to other places is a reality for only few residents. Given these differences in lived experience and future expectations, different kinds of policy support are required for different people in different kinds of slums. For example, notified-slum households are investing heavily in education, but the returns on these investments are currently low. Notified-slum residents, therefore, would benefit most from receiving support that can help raise social mobility, enabling their children to become medical doctors, software engineers, senior business professionals and so on, positions achieved by very few.

In contrast, blue-polygon settlers have a very different set of expressed needs and hopes regarding public assistance. Their basic needs – electricity, clean drinking water, security of person and property, education, secure housing, affordable health care – are largely unmet or require large expenditures. Lacking identity cards in the city (and thus not registering as constituents or voters), blue-polygon dwellers are unable to attract much political patronage or official support. Drives to acknowledge and register their presence in the city must, therefore, take precedence. Subbaraman et al (2012 p661), who have studied one such settlement in Mumbai, focusing primarily on health outcomes, underline how such slums constitute a ‘legal ‘no-man’s land’ – a zone absent of policies that address their existence as human beings and citizens of the city’. They ‘emphasise the need to establish minimum humanitarian standards for...basic services such as water, sanitation, solid waste collection and restitution after calamities’. Helping first-generation migrants prepare for and address the obstacles they face both in the city and in their native villages will enhance resilience among this vulnerable group. Whether this can be done by providing support for rural livelihoods, or whether – since cities are where Indian planners are pinning their future hopes¹¹ – to deploy public resources for building improved urban infrastructures, is a critical question, with multiple answers.

The methods presented here are an effort to develop complete slums maps with clearly marked boundaries and with settlements classified in terms of a slum typology. Whilst these methods have been useful in the Bengaluru case, wider application in other large and small Indian cities remains to be seen. In Bengaluru, at least, the existence of substantial differences between the two types studied through detailed neighbourhood analyses and extensive household interviews shows that treating slums as a homogeneous category can result in serious policy mistakes. There is little that residents of first- and fourth-generation slums and slum dwellers have in common that can justify any unitary policy in the context of global climate change.

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¹An earlier version of this chapter is available as a paper: Krishna A, Sriram M S and Prakash P 2014 Slum types and adaptation strategies: identifying policy-relevant differences in Bangalore *Environment and Urbanization* 26 (2) 568-585.

²This trend began after the last census, conducted in 2001, but since that exercise was confined only to the largest Indian cities, a more complete enumeration was conducted in the 2011 census.

³The capital city of Karnataka was known by the name Bangalore and has been renamed as Bengaluru.

⁴ Despite data limitations, some notable investigations have examined longitudinal trends, using innovative methods. See for example, Bapat (2009); Bhatia and Chatterjee (2010); Krishna (2013); Mitra (2010); and Ramachandran and Subramanian (2001).

⁵ Field investigations for this study were in a large part supported by Jana Urban Foundation, Bengaluru. The authors are thankful to colleagues in JUF as well as Ms. Purnima Prakash (then with IIMB) who lead the field investigation.

⁶ See for example, Kit, Ludecke, and Reckien (2013); Livengood and Kunte (2012); and Sudhira, Ramachandra and Jagadish (2004).

⁷ Rather than considering what is colloquially known as Greater Bengaluru (which extends over a wider and fast-expanding area, covering in addition to the BBMP's jurisdiction several smaller peri-urban areas), we selected to focus initially on a well-identified area constituting the core of this city. Our methodology can be extended to Greater Bengaluru at a later stage

⁸ We refer to "blocks" rather than houses because the number of distinct homes (or households) that lie inside any particular block cannot be accurately foretold using only the publicly available Google Earth images

⁹ While plastic sheets similar to the blue roofing sheets are available in multiple colors, and people might resort to covering their dwelling with discarded flex banners we found that blue sheets are the norm in these settlements, representing an affordable compromise between expense and durability.

¹⁰ Thus, while our methodology is subject to the error of omission – i.e., not picking up recently established blue polygons, the error of commission, as we could make out from our ground verification exercises, is minimal; there were no false positives in these identifications.

¹¹ See, for example, the report of a high-level committee of the Indian government, which begins by assuming that cities "are the reservoirs of skills, capital and knowledge. They are the centers of innovation and creativity. They are the generators of resources for national and state exchequers. They are also the hopes of millions of migrants from the rural hinterland and smaller settlements. With growth of the services sector and surge of the knowledge economy, the population pressure on cities is bound to escalate" (GOI 2010: 1).