



# Upgrading Housing Settlements in Developing Countries

## The Impact of Existing Physical Conditions

Vinit Mukhija

*University of California Los Angeles, 3250 Public Policy Building, Los Angeles, CA 90095-1656, USA*

**Both conventional policy, and the literature on housing consolidation for low-income groups in developing countries typically focus only on tenure status as the key variable in housing improvement, and on tenure legalization, as the preferable, in situ improvement strategy. Demolition of slums and their redevelopment is not considered as an option that may be in the best interest of slum dwellers. This paper, however, presents evidence from Mumbai's experience with slum redevelopment programs that suggests that the prevailing wisdom has limitations and that under certain conditions, there is a constituency among slum dwellers for redevelopment. Secondly, the Mumbai case suggests that policy makers and analysts, apart from focusing on tenure status should also pay attention to the existing physical conditions within settlements. Physical conditions — the location of settlements; the land uses in them; settlement layouts; and the sizes of the lots within them — can impact the success of upgrading strategies, particularly, the preference of beneficiaries for different strategies. However, the slum dwellers' interest in redevelopment is not simply because of a consumer preference for better housing conditions but more likely because of an economic interest in more valuable housing. © 2001 Elsevier Science Ltd. All rights reserved.**

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### Introduction

This paper presents evidence from Mumbai that suggests that there are limitations to the conventional wisdom on housing improvement and consolidation in low-income housing settlements in developing countries. The prevailing wisdom promotes tenure legalization and in situ upgrading, managed by beneficiaries, at an individual household level. Operationally, this precludes the possibility of a strategy of slum demolition and subsequent redevelopment at an aggregate level, such as at a block or slum-pocket level. Demolition policies are considered to be contrary to the interests of low-income beneficiaries. As a consequence of this conventional wisdom, policy attention and academic debate largely focus on one variable — tenure — and its legalization. Other variables that may influence housing improvement, such as the physical conditions within settlements, are not given sufficient attention.

In Mumbai, however, a strategy of slum redevelopment was introduced in the mid-eighties and contrary to the expectations of a lot of critics, the strategy gained considerable support among the city's slum dwellers. This paper aims to understand and explain why the slum dwellers' interest in demolition and redevelopment, although surprising, is completely rational. The paper also speculates on why the demolition and redevelopment strategy is barely explored by the conventional literature. A rare exception is Bangkok's land sharing program, which was also based on redevelopment and enjoyed considerable support in the city (Angel *et al.*, 1983).

The paper suggests that the theoretical, morphological model of low-income settlements underlying the conventional wisdom is based on a set of questionable assumptions. These assumptions include, low-income housing settlements are in peripheral locations; the land uses within them are mixed; the settlements are well laid out; and the lot-sizes within these settlements are reasonably large. However, the reality in many settlements, particularly in the slums

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\*E-mail: vmukhija@hotmail.com

of Mumbai, is much more complex. Half of the city's residents live in slums (Panwalkar, 1996). Physical conditions, such as location, land use, layout, and lot-size, do not follow a simplistic model.

In Mumbai, the state government, according to the Maharashtra Slum Areas Act, 1971, defined slums as areas where buildings are unfit for human habitation for reasons such as dilapidation, overcrowding, faulty arrangement of streets and lack of ventilation, light or sanitary facilities (Government of Maharashtra, 1971). Because of such physical attributes, under certain conditions, slum dwellers may find redevelopment more attractive than in situ consolidation. However, their preference for redevelopment may not be simply based on a desire to achieve better housing conditions but because the slum dwellers expect to receive a more valuable real estate asset after demolition.

To illustrate these arguments, the paper uses evidence from Mumbai's experience with traditional slum upgrading and non-conventional slum redevelopment programs. The data in this study comes from multiple sources, including, extended personal interviews with key stakeholders, particularly, government officials involved in implementing the city's housing improvement programs. The interviews have been supplemented with secondary material from newspaper and news magazine articles, published and unpublished reports and government documents.

This introduction is followed by a review of the literature to show how low-income housing policy focus shifted from physical determinism to legal determinism, with tenure legalization as the basis for individual housing improvements. Next, is the evidence from Mumbai, followed by an analysis of how the physical conditions within the city's slums establish a basis for slum dwellers to be interested in redevelopment. The conclusion, recapitulates the main arguments and suggests some policy and research implications.

## **Literature review: ignoring the physical dimension**

### *The physical focus of modernist strategies*

A review of the literature on housing settlements and strategies for improving them, cannot ignore the importance of the early Modernist Movement in architecture and planning in the first half of the twentieth century. Architects like Le Corbusier were at the forefront of Modernism and they forcefully advocated demolition of the old crowded parts of the city and redeveloping new, better housing that, they argued, would improve the lives of millions of urban dwellers (Le Corbusier, 1929). Alan Colquhoun has asserted that one can look at the slums of the German cities and understand why the Modern Movement started (1989). For quite a few architectural researchers, Modernism was legitimized because it was an

attempted solution to the housing problem (Frampton, 1980; Rowe, 1993).

In accordance with the Modernist tenet of demolition and redevelopment, many western countries launched urban renewal programs. Similarly, many developing countries initiated slum clearance programs. These programs were aimed at demolishing old, substandard houses and replacing them with a new housing stock. However, in both the rich countries and in the poor countries, by and large, these programs led to a loss in the total number of available housing units (Abrams, 1964).

By the early sixties, the Modernist redevelopment strategy was being strongly criticized. There were two main criticisms. First, the intended beneficiaries, the urban slum dwellers, were not benefiting. Their existing housing was being destroyed and the strategy was aggravating the housing shortage. Charles Abrams' often quoted observation sums up this critique, "In a housing famine there is nothing that slum clearance can accomplish that cannot be done more efficiently by an earthquake" (1964, p 126). Second, critics disapproved of the Modernist strategy for its flawed belief in physical determinism and its unsubstantiated assumptions about the physical preferences of beneficiaries (Jacobs, 1961; Gans, 1962; Turner, 1963; Turner, 1968a).

### *Self-help and tenure legalization*

Partly because of the criticism and partly because of the lack of financial resources required to implement urban redevelopment, urban renewal and slum clearance ideas became less prominent in the seventies and eighties. Instead, attention shifted to strategies and programs of improving and consolidating existing housing. In developing countries, international agencies led by the World Bank adapted and promoted John Turner's ideas of "self-help" and supported the policy of tenure legalization.

Turner, based on his work in Peru, argued that housing conditions in low-income housing settlements improve over a period of time. There was no need to demolish slums as they were part of the housing solution, not the problem. He also argued that slum dwellers preferred the opportunity to improve and consolidate their existing housing, self-help, as opposed to an institutionalized government strategy of redevelopment (Turner 1967, 1977; Turner and Fichter, 1972). He also identified perceived security of tenure as the key variable to facilitate housing improvement. The World Bank was one of the first international agencies to promote a policy of security of tenure or tenure legalization, through its Slum Upgrading Programs (SUP). Subsequently, many researchers associated with the Bank advocated tenure legalization and claimed a positive causality between titling, security of tenure and investment in housing (Friedman *et al*, 1988; Jimenez, 1983, 1984; Malpezzi and Mayo, 1987).

However, many scholars have questioned the legal

and economic wisdom of tenure legalization. There are three distinct strands of criticism in this literature. The first is that security in low-income housing settlements depends less on legal status and more on the occupants' perceptions of the probability of eviction, the availability of services, and the passage of time (Doebele, 1983; Gilbert, 1990; Razzaz, 1993; Strassman, 1984). The second is that tenure in itself is not sufficient to lead to higher investments since housing finance is not available (Bruce, 1981; Mehta and Mehta, 1991; Smets, 1997). The third objection is that tenure legalization (by raising the value of the property and its rents) can hurt the most vulnerable, namely, poor tenants (Angel, 1983; Burgess, 1985; Payne, 1989; Sanyal, 1996; Varley, 1987).

Interestingly, neither the literature advocating tenure legalization nor the literature criticizing the strategy, found it imperative to question, in what kinds of slums is tenure legalization likely to lead to upgrading. Although, self-help's claim of being an "architecture that works" (Turner, 1968b), was the subject of a sophisticated academic scrutiny that asked the question: "Under what circumstances?" (Ward, 1982a, p 13); most of the criticism of self-help was Marxist inspired. The critics were more interested in pointing out self-help's inherent contradictions (Burgess, 1982), structural limitations (Skinner, 1982), and economic determinants (Ward, 1982b). They did not find it necessary to focus the inquiry at a more grounded micro-level and ask the question: Under what physical conditions does self-help work? Are there any physical attributes of settlements that support or impede slum upgrading?

#### *Underlying assumptions in the literature*

How is it that both the conventional wisdom and its conventional critique are able to disregard the impact of physical conditions within housing settlements on the prospects and attractiveness of tenure legalization as an upgrading strategy? It seems fair to suggest that literature and policy are able to underplay the impact of physical conditions on upgrading by making some assumptions. My interpretation is that the physical model assumed by policy-makers and scholars is similar to the observations of William Mangin and John Turner in the *barriadas* of Lima, Peru (Mangin, 1967; Mangin and Turner, 1968). Thus, the key physical assumptions underlying the literature and policy are:

1. Low-income housing settlements are in peripheral locations
2. The settlements have a very mixed land use
3. The settlements are clearly and regularly laid out
4. Individual lot-sizes within these settlements are "reasonably" large

First, in general, the literature follows the location theory logic of neo-classical real estate economics. In other words, the poor live on poor land. This is aptly

captured in the title of a paper by Alan Gilbert and Peter Ward (1982), "Land for the Rich, Land for the Poor." The authors argued that the poor occupied land that is low in value because of its inherent characteristics (height, soil, etc.) as well as acquired characteristics (amenities and infrastructure provision, social character, etc.). Thus, the poor start with land unwanted by others and this land is expected to get poorer over time because of the lack of public investments. However, many cities of the developing world have been growing at a significant rate. As a consequence of physical expansion, many low-income housing settlements, in once peripheral and marginal locations, may now occupy a more strategic and central location in the geography of the city. The better location is likely to lead to a large differential in land values and a potential incentive for demolition and redevelopment.

Secondly, low-income settlements are expected to have a very mixed land use. These settlements are regarded as major employment and wealth-creation centers (Benjamin, 1991). The poor residents not only live in these settlements but also depend on activities within the settlements for their livelihood. Therefore, any disruption of those economic activities can have a significantly adverse impact on the households. However, contrary evidence suggests that it is not atypical for slum-pockets to be largely residential in nature, with slum residents working in service sector jobs in the city (Desai, 1995).

Third, the Modernist vision of slum clearance had assumed that squatter settlements were chaotic, unorganized and irregularly laid out. Mangin in his seminal work challenged the Modernist interpretation and argued that the internal structure of squatter settlements was clearly laid out (1967). Since then, a substantial amount of research work has built on Mangin's observation and has claimed that low-income settlements follow a gridiron pattern (De Soto, 1989; Ward, 1982b) and mimic urban rather than organic layouts (Baross and van der Linden, 1990; Payne, 1989). There appears to be some consensus that low-income housing settlements are regularly laid out.

The final key assumption is about the available lot-sizes within these settlements. Because lots are assumed to be large, they are expected to provide ample opportunity for incremental consolidation of housing. Interestingly, most of the upgrading literature does not include any figure drawings or drawings with reference scales (Clerc *et al.*, 1995; Fernandes and Varley, 1996; Peattie, 1968; Rodwin, 1987; Turner and Fichter, 1972; Ward, 1982a). Even the text rarely mentions the lot-sizes. At times, however, there are hints about the lot-sizes embedded in the text. For example, Lisa Peattie wrote that the houses in Venezuela's *barrios* had backyards with the occasional fruit trees (1968). Similarly, Janice Perlman described the lots in the Brazilian *favelas* as being large enough to allow for new rooms to be added to the existing houses (Perlman, 1976).

In the few cases where lot-sizes are actually indicated, they are “reasonably” large. John Turner (1967) described the typical *barriadas* in Lima as consisting of lot-sizes of 1200 square feet (110 m<sup>2</sup>). Peter Ward mentioned plots of 200 m<sup>2</sup> (2150 ft<sup>2</sup>) in Mexico City (1982b). Even cases outside Latin America can have large lot-sizes. Tokman pointed out that the densities in Ankara’s *gecekondus* are lower than the densities in the middle or high-income settlements of the city (1984). John Silas (1984) wrote that in the *kampung*s of Jakarta and Surabaya, more than 50% of the building plots have an area of over 50 m<sup>2</sup> (540 ft<sup>2</sup>) and over 30% exceed 100 m<sup>2</sup> (1080 ft<sup>2</sup>). Similarly, Lynn Pikhholz described a successful case of shack settlement upgrading in South Africa (1997) with lot-sizes of around 250 m<sup>2</sup> (2700 ft<sup>2</sup>) area. All these papers suggest that lot-sizes within low-income housing settlements are reasonably large — typically, larger than 50 m<sup>2</sup>, although, sizes of over a 100 m<sup>2</sup> are not uncommon.

There is, however, an inherent contradiction between the last two assumptions. While the observation that low-income housing settlements are regularly laid out indicates the presence of commercial pressure and the involvement of market-based entrepreneurs in land subdivision (Payne, 1989), the same commercial logic suggests that the idea of large lot-sizes is problematic and unsustainable for low-income groups. Thus, the two assumptions are likely to be contradictory, temporally, ie, over time, as urban land gets scarce and more expensive, and spatially, ie, across different land-markets, particularly where land is already more expensive. In other words, not all slum dwellers will have the opportunity to improve and consolidate their housing through incremental growth strategies.

Nonetheless, literature and policy approaches appear to assume, uncritically, the above model of low-income housing settlements across the developing world. Some of Mumbai’s slums, on the contrary, do not follow the above assumptions. Their case of redevelopment is elaborated in the next section.

### **Redevelopment of Mumbai’s slums**

Mumbai, also known as Bombay, is India’s financial capital and largest city; it is also capital of the state of Maharashtra. It is regarded as the country’s industrial and commercial center and its richest city. In the 1991 Census of India, Greater Mumbai had a population of 9.9 million people. Some of the older settlements at Dharavi, Byculla and Khar-Dhanda can be traced back to fishing villages. Most of the slums, however, developed after the country’s independence in 1947. Not surprisingly, numerous strategies to deal with slums have been implemented in the city.

### *Slum upgrading in Mumbai*

In 1956, Mumbai was one of the six pilot cities covered under the Central Government’s Slum Clearance Scheme. The intention to demolish slums and displace the residents, however, was controversial and problematic. Consequently, in 1960, the Bombay Municipal Corporation (BMC) resolved that no unauthorized structure constructed prior to 1956, was to be demolished by the corporation without providing alternative accommodation to the occupiers (BMC Resolution No. 32 of 1960, quoted in Babladi and Badheka, 1986). This, “tolerance” date of 1956, was subsequently extended to 1962 and later to 1964. In 1971, the Government of Maharashtra launched the Slum Improvement Program (SIP) to officially replace slum clearance (Desai, 1995) and to provide basic amenities to the slum dwellers. In 1979, the state government initiated discussions with the World Bank for an urban development assistance program for Mumbai (Panwalkar, 1996). After six years, the World Bank launched the Bombay Urban Development Project (BUDP) in 1985.

An integral component of the BUDP was a program of slum upgrading. The Slum Upgrading Program (SUP) was influenced by ideas of self-help and tenure legalization. Its central aim was to provide a renewable, 30-year leasehold-tenure. The program’s target was to upgrade 100,000 households, about 12% of the slum population of Greater Mumbai, according to the 1981 estimates. The policy-makers were conscious of the problems involved in private land acquisition and set a relatively modest target of upgrading only 10,000 homes on private land. Almost half of the city’s slums are on privately-owned land (Panwalkar, 1996). The World Bank intended to complete the SUP in five years.

Contrary to the World Bank’s expectations, there was a very weak demand for slum upgrading. It advanced the project completion date by four years and scaled down the target to 60,000 homes. Nonetheless, in 1994, when it closed the project, only 22,204 households had opted for tenure legalization through the SUP. In its completion report, the World Bank accepted that there was “the lack of a strong constituency for in situ slum upgrading on a cost-recovery basis” (World Bank, 1997, p ii). The World Bank, however, also pointed out that their program was undermined by alternatives, particularly the option of Slum Reconstruction that was formally introduced through the Prime Minister’s Grant Project (PMGP) in Mumbai.

### *Slum redevelopment programs in Mumbai*

The World Bank supported upgrading project was launched in January 1985, and in December, the Indian Prime Minister declared a grant of Rs.100 Crore (Rs.1 Billion) for housing projects in Mumbai. This formed the basis of the Prime Minister’s Grant Project (PMGP), administered by the state govern-

ment. The PMGP offered Dharavi's slum dwellers two program choices — first, a traditional tenure legalization option, very similar to the World Bank program, and second, a non-conventional Slum Reconstruction option.

The second option involved the demolition of existing slums and the redevelopment of new housing for slum dwellers on the original sites. Although, redevelopment was expected to be almost ten times more expensive, both policy options were planned to operate, primarily, on a cost recovery basis. In 1987, the cost of upgrading was estimated to be Rs.3500 and the redevelopment cost of a housing unit with a carpet area of 17 m<sup>2</sup> (180 ft<sup>2</sup>), was estimated to be Rs.37,500. For redevelopment, the state government was willing to provide a subsidy of almost 15% to the beneficiaries and a housing loan of almost 70%. However, the PMGP could not arrange for external housing loans of more than Rs.20,000 per beneficiary or approximately 50% of the estimated construction cost. Larger loans, although available, were more expensive. Consequently, the PMGP agreed to provide the beneficiaries with an interest-free loan for almost 20% of the cost.

The subsidy and the interest-free loan tied up the PMGP's funds. Consequently, it estimated that it could finance only 3800 units in the first phase of Slum Reconstruction (Dua, 1989). It planned to use its grant as a partial rotating fund. If there was more demand for redevelopment (as the beneficiaries repaid their loans and other external funding was accessed), more redevelopment projects would start. According to the PMGP's officials, despite the criticism of the redevelopment program for being against the interests of the slum dwellers, Dharavi's slum dwellers were interested in Slum Reconstruction and the demand far exceeded the first phase limit of 3800 units.

The redevelopment strategy was continued and expanded in the subsequent shelter improvement programs in the city. In 1991, the newly elected Government of Maharashtra introduced the Slum Redevelopment Scheme (SRD). Like the PMGP's Slum Reconstruction, in the SRD, slums were to be demolished and redeveloped with new housing for the slum dwellers. The financial structuring of the program, however, was very different. In the PMGP, the beneficiaries were expected to contribute a majority of the cost of redevelopment. In SRD, the initial plan was for beneficiaries to contribute less than 40% (Rs.25,000 out of an estimated total cost of Rs.65,000). In 1992, however, the direct contribution of beneficiaries was further reduced to about 23%, Rs.15,000 (*The Independent*, 1992). The state government made this subsidy viable by amending the land development regulations to create a cross-subsidy. It allowed private developers to develop additional floor area, through redevelopment, for sale in the free-market (*The Times of India*, 1991; Regulation 33 (10); Government of Maharashtra, 1991). Profits from the free-market sales would subsidize the slum dwellers.

High property values in the city made such an extravagant cross-subsidy strategy financially viable. The strategy was also driven by a major political imperative. The leader of the opposition party, the *Shiv Sena*, had promised "free housing" to Mumbai's slum dwellers. He claimed that the property values in the city were high enough to sustain a complete cross-subsidy. In Mumbai, the political competition between the Congress party and the *Shiv Sena* was very intense and the Congress had to propose a competitive alternative to the slum dwellers. But it decided to limit the private developers' profit to 25% of the project cost.

In 1995, however, the *Shiv Sena*, and its partners, won the Maharashtra state election. The new government decided to replace the SRD with a program of "free housing" and introduced the Slum Rehabilitation Scheme (SRS). At that time, property values in the city were among the highest in the world (*The Economist*, 1995). On paper, a complete cross-subsidy in many slums of the city was viable. To make the program attractive to private developers, the new government instituted a more market-friendly policy. It removed the previous cap of 25% on profits, made it easier to develop additional floor area and introduced the concept of Transfer of Development Rights (TDR), allowing the transfer of a part of the additional development potential to more attractive parts of the city. The developers still had to obtain the consent of slum dwellers for redevelopment (Government of Maharashtra, 1997).

Critics, however, warned that slum redevelopment would not be attractive to the city's slum dwellers and the program would be a failure (Patel, 1995; Singh and Das, 1995). The evidence from 1998 indicated that the implementation record of the slum redevelopment strategy was extremely poor (see Table 1). By August 1998, only 2242 units for slum dwellers had been redeveloped. More recent data from March 2000 indicated that since 1991, a total of only 3486 units had been built for housing the slum dwellers (*The Times of India*, 2000). The complete story, however, is more mixed. Although the project completion rate is extremely poor, this failure cannot be attributed to the lack of demand from slum dwellers. The evidence indicated that over 75,000 households of slum dwellers were interested in having their slums redeveloped (see Table 1).

There are at least two possible explanations for the slum dwellers' interest in redevelopment. First the strategy provides better housing conditions for the beneficiaries. Second, it provides more valuable housing. Although the apartment size for beneficiaries, as stipulated in the Slum Rehabilitation Scheme (SRS) regulations, is only 225 ft<sup>2</sup> (21 m<sup>2</sup>) of carpet area or almost 300 ft<sup>2</sup> (28 m<sup>2</sup>) of floor area, the new apartments are bigger than the average slum dwelling in Mumbai. According to the Afzulpurkar committee (Afzulpurkar, 1995) that was instituted by the state government to advise it on appropriate SRS regu-

**Table 1** Slum rehabilitation projects in Mumbai, 1998

		Proposals received	Proposals approved	Projects under construction	Projects with occupation certificates
Island	No. of projects	127	111	53	6
City	No. of units	NA	24,310	10,001	806
Western Suburbs	No. of projects	217	173	55	15
Eastern Suburbs	No. of units	NA	34,073	12,274	928
Island	No. of projects	102	83	37	5
Suburbs	No. of units	NA	17,306	6867	508
Total	No. of projects	446	367	145	26
Projects	No. of units	NA	75,689	29,142	2242

Source: Personal communication, Slum Rehabilitation Authority, August 1998

lations, 80% of Mumbai’s slum dwellers lived in houses smaller than 100 ft<sup>2</sup> (9 m<sup>2</sup>). In contrast, Sundaram (1995) claimed that 67% of the slum dwellers lived in houses smaller than 15 m<sup>2</sup> (161 ft<sup>2</sup>). A possible explanation for this discrepancy is that the Afzulpurkar committee was referring to data regarding the lot-sizes and not the total usable floor area. In Mumbai, it is common for the slum dwellers to have lofts in their houses. These 4–5 ft (1.2–1.5 m) high lofts are used for storage or sleeping and can effectively double the total usable area.

Although the new apartments are likely to be bigger, the beneficiaries cannot be completely sure that the new apartments will be as comfortable as their old huts. At the same time, the beneficiaries are clearly aware of the increase in the property values of their assets. For example, in 1987, in the Markandeya Cooperative Housing Society (MCHS), the slum dwellers’ houses were, on an average, worth Rs.10,000. Immediately after the slum-pocket was selected for redevelopment, the property values increased by 50–100%. In 1995, when property values peaked in the city, the beneficiaries’ units were valued at almost half a million rupees! In 1998, when the cooperative’s members finally moved into their new houses, property values in the city had dropped but had stabilized at 1993 levels. Units in the MCHS were estimated to be worth Rs.350,000 — in other words, 35 times more valuable than the 1987 values.

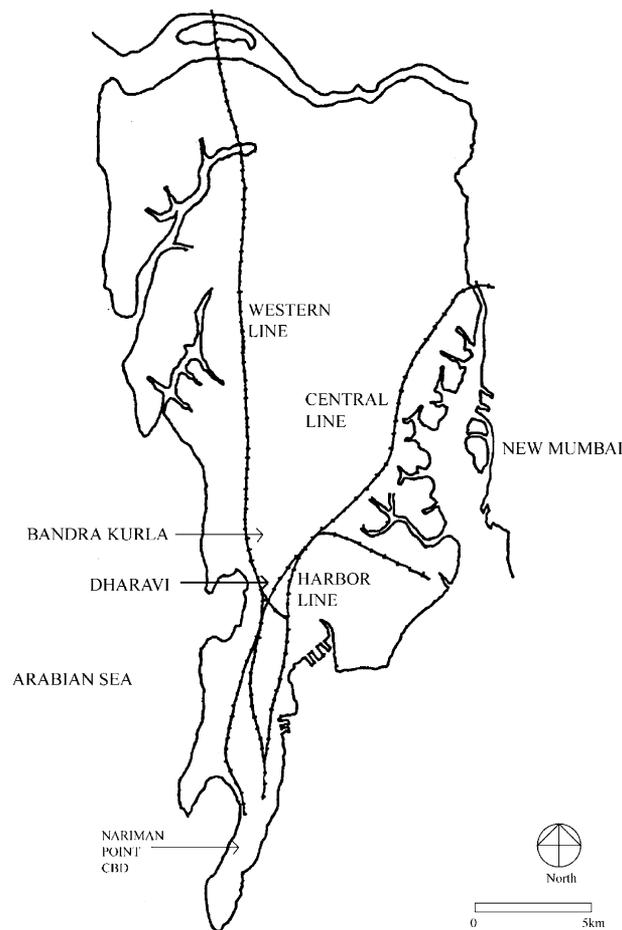
An important issue of interest in this paper is: why was slum redevelopment attractive as a strategy to capture the potential increase in property values? Clearly, the changes in the land development regulations by the state government are a key explanation. However, in the next section, I will argue that regulatory changes in the particular context of the physical attributes of Mumbai’s slums made the strategy attractive.

### Physical conditions and their impact on upgrading strategies

#### Location of slums

The first slum area selected for redevelopment in Mumbai was Dharavi. A key physical attribute of

Dharavi is its prime location (see Fig. 1). Its central location, however, is an acquired characteristic. When Dharavi started as a settlement, it was a swampy, fishing village at the periphery of Mumbai. Towards the end of the nineteenth century, leather tanneries were the earliest industries to locate in Dharavi. Tanneries are a problematic land use in India. Apart from the noxious smell, work with leather is considered impure by Hindus and the tanneries had to be located



**Figure 1** Map of Mumbai showing the location of Dharavi

at a distance from the city. Dharavi's abundant water supply also helped to make it an ideal location.

Over the years, as the settlement's population increased, residents filled the swamp with garbage and other waste to reclaim the land. During this period, the city also grew dramatically and once peripheral settlements, such as Dharavi have become more central. Dharavi is also fortunate in having easy access to city-level mass transit and infrastructure. It is served by both the Western and the Central railway lines. Another indicator of Dharavi's centrality, is the Mumbai Metropolitan Regional Development Authority's (MMRDA) proposal to develop the adjoining Bandra Kurla area as an alternative center for Greater Mumbai (Sundaram, 1989).

Dharavi is one of the many slums in the city to have a geographically attractive location. Almost a fifth of the city's slum population lived in the Island City, ie, south of the suburbs (MCGB, 1993). In other words, these slums have relatively central locations. Furthermore, the remaining slum dwellers are almost equally divided between the Western and Eastern suburbs (see Table 2). This is significant because property values in the west are much higher than in the east. Thus, Mumbai's slum dwellers do not necessarily live only in the poorest parts of the city. Furthermore, their relative location is dynamic and changes with the growth of the city. As a consequence, there is a potential differential in land values and an incentive for redevelopment.

*Land use in slum-pockets*

Dharavi's growth as a settlement was driven by various industries, including, leather tanneries, garbage recycling and illicit liquor distilling. However, Dharavi covers an area of almost 425 acres (170 ha). It has a number of pockets, some of which have a predominantly residential land use.

Rajendra Prasad Nagar in south Dharavi, close to the Matunga railway station, was such a pocket. Because of the relative lack of industries in this part of Dharavi, the Prime Minister's Grant Project (PMGP) selected Rajendra Prasad Nagar for redevelopment. There were some commercial uses, mostly shops, but these were along the main access road, the "Sixty Feet Road." For example, in the Markandeya settlement, along this road, of the 92 units redeveloped, only 11 were commercial (Mukhija, 2000).

**Table 2** Distribution of slum population in Mumbai

Area	Estimated slum population	Slum population as % of area's population
Island City	1,077,610	34.1
Eastern Suburbs	2,170,730	77.4
Western Suburbs	2,227,300	56.6
Total Greater Mumbai	5,475,640	55.3

Source: MCGB (1993)

The predominantly residential land use made it easier for slum dwellers to support redevelopment.

Rajendra Prasad Nagar is not unique. At the city level, it is estimated that only 10–15% of slum residents work within their slums (Panwalkar, 1996). In a more detailed and disaggregated study, Vandana Desai surveyed three Mumbai slums (Desai, 1995). In two of the three slums, she found that only a small minority of the slum residents worked near their residences and the land use was predominantly residential (Table 3). At the same time, it is also important to note that in one of the three slums, almost half of the workers worked in or near their homes. It is likely that such slum dwellers would not support redevelopment.

*Layout of slums*

The literature suggests that low-income settlements are regularly laid out. The regular layout makes it relatively easier to provide infrastructure and other services. However, in Mumbai, irregularly laid out settlements, such as Rajendra Prasad Nagar in Dharavi are common (see Fig. 2). Although, these layouts are sometimes lovingly described as "organic," or "highly permeable," their physical structure makes service provision difficult (Panwalkar, 1996). Without infrastructure and amenities, there is less incentive for slum dwellers to improve their housing. The lack of infrastructure, particularly water supply, also makes housing improvement more difficult. The problems posed by the irregular layouts in upgrading are further accentuated by the high densities in these settlements.

*The size of property lots*

During the implementation of Mumbai's Slum Improvement Program (SIP) in the seventies, despite budgeted financial allotments, the high density of the city's slums made it literally impossible to provide, even, common toilets or water taps (Panwalkar, 1996). There was no physical space for these services. Not only does the high density suggest that it is difficult to accommodate infrastructure interventions, it also implies that the residents' lot-sizes are extremely small. This is evident in the old survey layout of Rajendra Prasad Nagar. Contrary to the model of reasonably large lot-sizes suggested in the literature, in Rajendra Prasad Nagar, the majority of the lots ranged between 9 and 11 m<sup>2</sup> (100–120 ft<sup>2</sup>) and were similar to the city-wide lot-sizes described earlier. These small lot-sizes effectively restrict the potential

**Table 3** Slum dwellers working near their residences<sup>a</sup>

	Wadala	Worli	Kurla
Percentage of workers	4.3	49.1	8.3

Source: Desai (1995)

<sup>a</sup>Wadala and Worli are in the Island City (south Mumbai) and Kurla is in the Eastern Suburbs

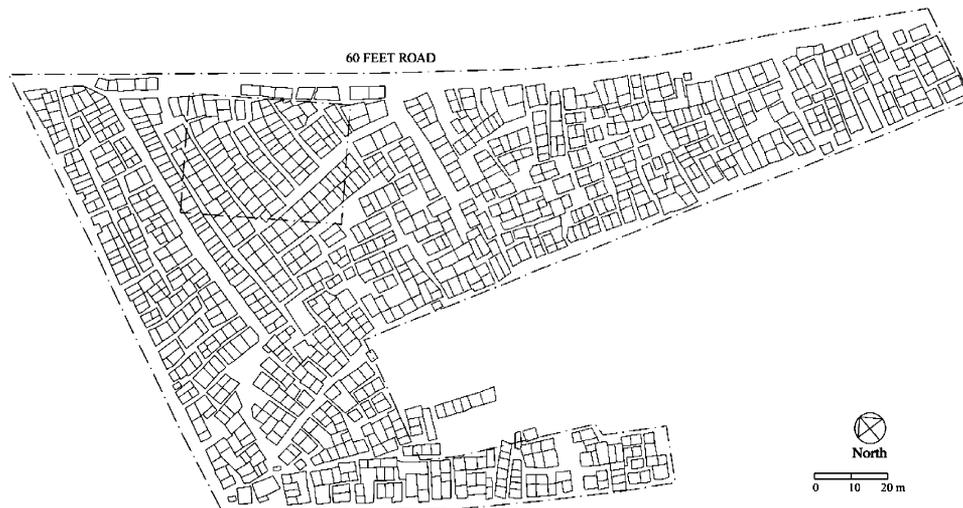


Figure 2 Survey layout of Rajendra Prasad Nagar showing the Markandeya pocket

of households to upgrade and consolidate their housing. This is another incentive for redevelopment.

## Conclusion

To summarize, the evidence from Mumbai suggests that physical conditions in housing settlements can vary from the assumptions in the conventional wisdom and these variations are likely to have an impact on the success of upgrading strategies. In extreme cases, as in Mumbai, slum dwellers may prefer the non-traditional strategy of demolition and redevelopment, as opposed to the conventional strategy of tenure legalization and in situ upgrading. But it is also important to recognize that slum dwellers will be interested in redevelopment only under the right conditions. For example, in Mumbai, not only do the slum dwellers receive tenure, but they also obtain larger housing and a significantly more valuable real estate asset.

The main policy lesson for policy-makers, however, is not the need to focus on redevelopment as opposed to in situ upgrading. Mumbai's slum redevelopment experience, like Bangkok's land sharing program, forms one end of the spectrum of strategies. In situ upgrading, through tenure legalization, is the other end. In between, more hybrid strategies are possible and desirable. Housing policy should aim for in situ upgrading based on lot-readjustment, with or without limited demolition and resettlement and, if possible, with partial cross-subsidies. What is needed is a more differentiated set of policy options. The specifics of the upgrading programs should depend on the local context, including the physical conditions within the settlements that are being upgraded.

Research scholars can contribute to the efficacy of upgrading strategies by developing appropriate ana-

lytical frameworks that include more than the tenure status and help to explain the upgrading process more completely. The key research question is: what independent variables are important and what physical attributes have more impact on upgrading? Another fruitful avenue for scholars is to re-examine the classification system of low-income housing settlements. At present, the literature classifies settlements as legal or illegal, or as formal or informal, on the basis of tenure status. Not surprisingly, the typical policy response is legalization or formalization. If a more elaborate set of variables can be included in the classification system, the policy responses are likely to be more differentiated. It is true that this policy and research advice may lead to more complex and difficult-to-implement interventions. However, they are also likely to be more acceptable and useful to the beneficiaries.

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