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Suitability Assessment for Slum Redevelopment Approaches: A Case Study of Gosavi Vasti Slum

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Abstract: This study is an attempt to rationally figure out which slum redevelopment approach is best suited to a particular case. A slum is a highly populated urban residential area consisting mostly of closely packed, decrepit housing units in a situation of deteriorated or incomplete infrastructure, inhabited primarily by impoverished persons. This study aims at listing down all the various slum redevelopment approaches used till date and determines various factors that affect them. Further, by studying these various factors on which various approaches depend, the most suitable approach is to be suggested. Slum redevelopment approaches in India have been primarily linked with the schemes available at the time. Hence, this thesis is an attempt to compare them. There are several factors that influence which redevelopment approach is to be used. These factors are identified from literature review. This study attempts to assess the identified parameters and understand the relativity of every parameter with each redevelopment approach.

Keywords: Redevelopment Approach, Slum Redevelopment, Encroachment, Squatter, Sampling.

I. INTRODUCTION

The word “slum” is often used to describe informal settlements within cities that have inadequate housing and miserable living conditions. They are often overcrowded, with many people crammed into very small living spaces. Slums are not a new phenomenon. They have been a part of the history of almost all cities, particularly during the phase of urbanization and industrialization. Slums are generally the only type of settlement affordable and accessible to the poor in cities, where competition for land and profits is intense. The main reason for Slum burgeoning is rapid and non inclusive patterns of urbanization catalysed by increasing rural migration to urban areas.

Cities have been growing at a tremendous rate now-a-days. This growth brings better facilities, better jobs and improves the standard of living of people. Hence, people rush into these cities assuming that they would get better jobs for themselves and hopefully be able to improve their standard of living. While, some might succeed, most of them fail. These who fail are then not able to afford houses and other amenities and facilities. This eventually leads to the formation of slums in cities. And as the numbers of slums is increasing day by day, this issue has become a major problem in all cities. That is why there is a need to study slums, their formation and Redevelopment even further. Out of 4,041 Statutory Towns in Census 2011 Slums reported from 2,543 Towns (63%) Total Slum Enumeration Blocks (SEBs) in Census 2011 is about 1.08 lakh in the country. The condition of slums in Indian cities would be reflected through the census reports. A brief about the results of their surveys are stated below:

Table I
Condition Of Slums In India

Sr. No.	Indicator	No. Of Households (in lakhs)
1.	Total (Urban)	789.
2.	Slum	137.
3.	Non-Slum	652.
	Indicator	No. Of Households (in %)
1.	Slum	17.4%
2.	Non-Slum	82.6%

From the above data, we can easily conclude that the problem of slums in Indian cities is a major one. About 63% of statutory towns have slums. This would mean that only 37% of statutory towns are without slums, which is a very small number. That is why the issue of slums needs to be addressed at the earliest.

The problem is even worse in Urban Areas. As seen above, out of the total urban areas, slums consist of about 17.4% no. of households. This is a huge number. Pictorially, this would mean that, about 1/5th of urban areas consist of slums.

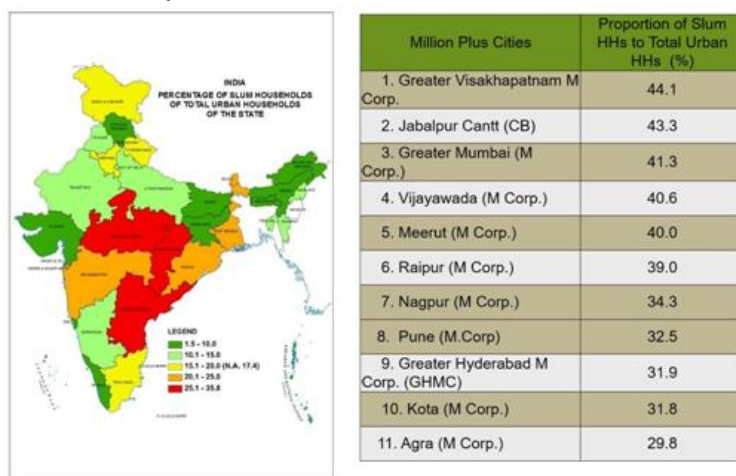


Fig. 1 Percentage of Slums in Indian Cities.

The above figure shows the percentage of slums in major cities of India. Greater Vishakhapatnam has the highest percentage of slums (44.1%). This means that almost half of the city's area consists of slums. This is a very dangerous scenario and calls for immediate action to be taken. Furthermore, the scenario is serious in Pune as well. The reason I'm stating this is because of the fact that my case study chosen for this study would be a slum(s) in Pune. Pune also has about 32.5% percent of population living in slums.

II. GOVERNMENT POLICIES AND SCHEMES

Slums manifest the worst form of deprivation that transcends income poverty. They are characterized by acute over-crowding, insanitary, unhealthy and dehumanizing living conditions. They are subject to insecure land tenure, lack of access to basic minimum civic services such as safe drinking water, sanitation, storm drainage, solid waste management, internal and approach roads, street lighting, education and health care, and poor quality of shelter. A significant proportion of the slum dwellers also face social burdens and health problems worse than their non-slum and rural counterparts. Civic bodies do not provide the required municipal services in slums on the plea these are located on 'illegal' space. Moreover, the scale of the problem is so colossal that it is beyond the means of Municipalities which lack a buoyant fiscal base.

Hence, to tackle these issues various methods and solutions have been given till date. These solutions were often in terms of various schemes and policies developed by the government. Broadly, the programmes for improving the access of the urban poor to land and basic Services can be classified into three categories based on the system of management, the levels of cost recovery, methods of implementation (either through the local Community or any of the three tiers of government).

These schemes are stated in the figure below:



Fig. 2 Slum Related Schemes in India.

As the time passed, newer schemes were implemented as older ones needed modifications because of their limitations. Hence, all redevelopments take according to the scheme implemented by the government. But there has never been a comparison made between so as to know which of these methods are better as compared to each other.

Learning from the above schemes, the following parameters were linked to the methods as stated above.

Table 2
Parameters Linked To Slum Redevelopment Approach

Slum Redevelopment Approach	First Implementation in India	Parameters
Slum Clearance.	1956	<ul style="list-style-type: none"> Land Typology Any Hazardous land use nearby. History of diseases in slum dwellers.
Slum Improvement	1996	<ul style="list-style-type: none"> Availability of Govt. Funds. Paying capacity of people. Current housing quality Amenities present.
Improving Living Standards by provision of training and jobs to slum dwellers.	1997	<ul style="list-style-type: none"> Gender diversity. Livelihood activities. Basic skill upgradation Number of Children. Current unemployed dwellers. Demographic Profile. Caste. Income of slum dwellers.
Provision of Sites and Services	December 2005	<ul style="list-style-type: none"> Paying capacity of people Connectivity to major road networks. Major public transport to work centres. Amenities given after redevelopment Distance from nearest market, primary school and health centre.
Provision of additional FSI incentive to the builder for rehabilitation of slum dwellers.	June 2015	<ul style="list-style-type: none"> Current Price of Land. Livelihood activities. Demographic profiles. Caste.

III. STUDY AREA PROFILE

The case study chosen for this study would be a one of the slums from Pune City, Maharashtra. The primary reason for this being that Pune is a metropolitan region, and hence the number of slums is greater here. In the statistics stated above, it was seen that Pune had about 33% of the urban population living in slums. Below are a few images that show the seriousness of the problem of slums in Pune.

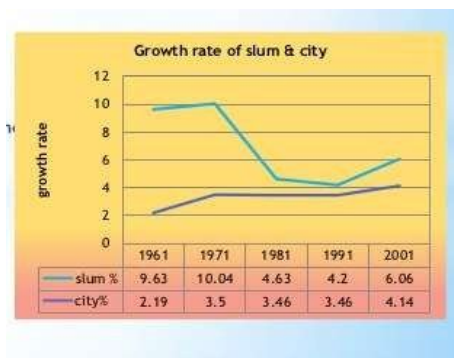


Fig. 3 Growth Rate of slum and City.

A. Current Scenario in Pune

- 1) Total Area: 331.3 sq. Km.
- 2) Population: 65 lakhs (approx)
- 3) Population in Slums: 20.08 lakhs (approx)
- 4) % Population in Slums: 32.5%
- 5) Encroachment of Slums: 8-9%

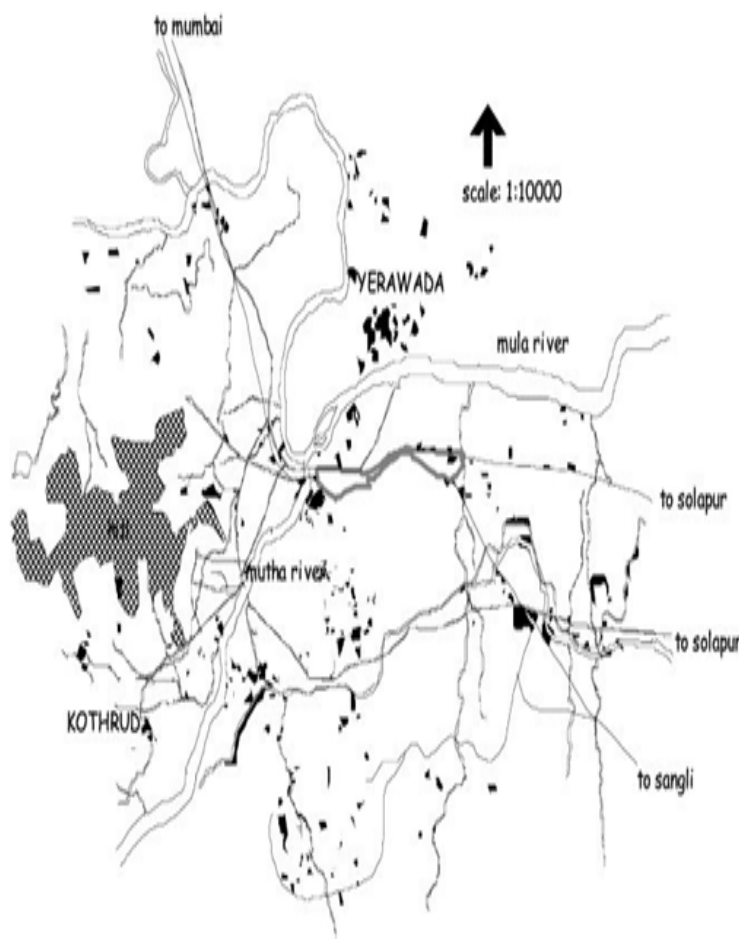


Fig. 4 Location of Slums in Pune.

B. Case Study: Gosavi Vasti

Gosavi Vasti slum is situated in Kothrud area in Pune. It is among the notified slums in Pune, from the 1980s. The slum has been formed on a government land on 31.10.1984. The slum occupies about 13981 sq m of land. The Slum population being almost 2700, 2625 to be exact, with total number of slum structures being about 525.

Now, why was this slum chosen particularly, has a lot of answers. Firstly, the slum being located on a government land keeps all of the slum redevelopment approaches open. If the slum had been on a private land, then in most cases the private developer wants the slum relocated so that he could put his land to use for earning larger profits from it. Secondly, the Gosavi Vasti Slum has been allocated a residential reservation in the development plan. Thus, this residential land use reservation could help to construct housing for the slum dwellers there itself, or it can also be used to construct public housing. Thus, giving enough flexibility to try to implement, if needed, most of the approaches. Lastly, apart from the above factors, the Gosavi vasti is located in one of the important parts of the city. That being said, redevelopment and rehabilitation of such projects will surely get enough funding, if needed. Hence proving the practicality of this paper. An image of the slum as seen from satellites is shown below:



Fig. 5 Gosavi Vasti Satellite image.

IV. SAMPLING

Now once the case study is decided, it is also important that the sample size for the primary survey also be decided. This is required so that a correct number of samples be surveyed and then the results obtained would show an actual image of the scenario currently present.

To calculate the survey sample for a primary survey with a finite population, the following formula is used:

$$\text{Sample Size} = \frac{Z^2 \cdot p(1-p)}{e^2} \div \left(1 + \frac{Z^2 \cdot p(1-p)}{e^2 N} \right)$$

Where,

1) Z = Z value, eg. 1.96 for 95% confidence level.

2) p = Percentage picking a choice, expressed in decimal

3) N = Total Population.

4) e = Acceptable error.

In this case study, it is assumed that the confidence interval be 95, p hat be 0.05 (which is used in most cases for sampling) and an acceptable error of 0.04. To briefly define these terms, their definitions are as follows:

- Acceptable Error (e):** This is the level of precision you require. This is the plus or minus number that is often reported with an estimated proportion and is also called the confidence interval. It is the range in which the true population proportion is estimated to be and is often expressed in percentage points (e.g., $\pm 2\%$).
- Confidence Level (Z):** This is the probability that the margin of error contains the true proportion. If the study was repeated and the range calculated each time, you would expect the true value to lie within these ranges on 95% of occasions.
- Population Size (N):** It is the total number of distinct individuals in your population.
- The Sample Proportion (p):** Is what you expect the results to be.
- Sample Size (n):** It is the minimum sample size you need to estimate the true population proportion with the required margin of error and confidence level.

With the help of above values, the sample size was calculated with this formula and it was then found that the sample size should be 96 household.

V. DATA ANALYSIS

After the collection of primary and secondary data, analysis is done. The analysis is done with regards to the parameters identified in the literature review.

TABLE 3
Parameter suitability.

Parameter	Slum Clearance	Slum Improvement	Provision of training to Slum dwellers	Provision of Sites and Services	In-Situ Redevelopment
Hazardous Land	As the slum is not situated on a hazardous land, slum clearance cant be done.				
Current Amenities		Slum improvement can only be done when amenities are present within the slum. No such amenities present in the case study.			
Households with Sewing Machine			Since 33% of households have a sewing machine, it is our opportunity to catch on this and train others too. Those who already know and help us in this process. It will help generate more income for the family and uplift the living standards		
Households with Furniture			Since only 18% of families have furniture, that means that 82% of families don't generate enough income. Provision of training and jobs will help them increase their income.		As houses currently lack adequate furniture, redeveloped houses would be better than the current ones.
Parameter	Slum Clearance	Slum Improvement	Provision of training to Slum dwellers	Provision of Sites and Services	In-Situ Redevelopment
Market Nearby					The market being only 300 meters away encourages in-situ redevelopment. Constructing no new market would save down costs.
Primary School				Since a primary school is already present in the vicinity, provision of educational facilities is not required.	Doing an in-situ redevelopment would still mean that the slum dwellers have a school in their neighborhood vicinity. It will be beneficial for the slum dwellers.
Healthcare Facility				Since hospitals are	Doing an in-



				already present in the vicinity, provision of healthcare facilities is not required.	situ redevelopment would still mean that the slum dwellers have hospitals in their neighborhood vicinity. It will be beneficial for the slum dwellers.
Gender Diversity			The slum has 51% of its population comprising of women. Of these, only 20% go to work. Training women in this slum can help increase income for a lot of families.		
Place of Work					About 94% of the slum dwellers go to work at walkable distances. Hence, they cannot be relocated as they work in the nearby areas. In-situ redevelopment is beneficial in this case.

Parameter	Slum Clearance	Slum Improvement	Provision of training to Slum dwellers	Provision of Sites and Services	In-Situ Redevelopment
Type of House		Since, 76% of the houses are kutchha houses; a slum improvement is a must.			76% of the houses are katchha houses. Hence, Redevelopment, the slum dwellers would get better homes without government having to pay for them.
Schooling going Children			All children attend school, and hence it will become easier to train them (if needed in the future).		

VI. PROPOSAL

After analyzing based on the above parameters, a summary of the above is illustrated below. A tick shows that the method can be applicable and a wrong mark shows that implementing the particular method is not feasible or Applicable.

TABLE 4
Data Analysis For Proposal

Parameter	Slum Clearance	Slum Improvement	Provision of training to Slum dwellers	Provision of Sites and Services	In-Situ Redevelopment
Hazardous Land	✗				
Current Amenities		✗			
Households with Sewing Machine.			✓		
Households with Furniture			✓		✓
Market Nearby					✓
Primary School and healthcare facility				✗	✓
Gender Diversity			✓		
Place of Work					✓
Type of House			✓		✓

In my opinion, “in-situ redevelopment” is a speedy method for slum eradication whereas provision of skills and training is a long term method of slum eradication. Additionally, in a metropolitan area like Pune, land is very precious. In the in-situ redevelopment process, a part of the land of the slum could be used to provide housing to other potential residents as well.

I would thus suggest a mix of both approaches where in after an in-situ redevelopment, the authorities should regularly check upon the running of the project. If unsuccessful, the provision of training can be incorporated in the process so that the slum dwellers can also afford a frequent maintenance of their property. This keeps the project successful even in the long run.

VII. CONCLUSION

After Studying and understanding all the theories and all the government schemes we can conclude that In-situ Redevelopment can be the best suitable approach for the selected case study. Maximum number of tick marks is in Provision of Training to Slum dwellers and In-situ Redevelopment state that these are the suitable Redevelopment approaches for this case study. Hence here we can propose a In-situ Redevelopment of the slum area with respect to PMAY guidelines with the help of the local govt. (ulb) and private developers.

Proposal number two can be training the slum dwellers in tailoring as many of them already have sewing machines. This training can help them earn more wages and can lead to the increase in standard of living of these people.

VIII. ACKNOWLEDGEMENT

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