

Rehabilitation of Slum: An Innovative Approach to Urban Development

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Abstract

Urbanization and faster speed of our life have let us live a happy and smooth life but with accordance to the advancement there adds a discomfort to the city life. A city is considered developed when it have all the possibility to develop but as far as city's now a day's face many of development problems due to which the city's development is incomplete. The urban population in India has increased significantly from 62 million in 1951 to 285 million in 2001 and is estimated to grow to around 560 million by the year 2021. It would be touching 37% of the total population in next 15 years. India's urban population has growth rate of nearly 41% in last decade. This directly means providing additional shelters for around 65 million households, as well as places to shop, work besides number of administrative and entertainment complexes. We are focusing on sustainability in the realization the human rights to slum and its dwellers, the report examines how the rights of slum can and must be met for present and future generations. Using the human rights framework, the report analyses states' common approaches to its water and sanitation, particularly in adopting measures both during times of normalcy and during economic and financial crises, and shows how those approaches often fail to incorporate sustainability. In this paper we tried to reach the stack holders and users to get the problems according to them rather than studying it or classifying it as a whole. The purpose reach from the classification of their problems and providing sustainable temporary solution to them such that the time till they are living there they should live not suffer their living. As a part of the conclusion to the paper we have declared the feasible sustainable solution to the problems they face. We also have enlisted points that slum users want to convey to the government. The design of the various sustainable solutions to the base problems is also given.

Keyword- Rehabilitation of Slum, VIP, Urbanization

I. INTRODUCTION

We are here using a methodology used by designers to solve complex problems and find desirable solution for clients, design thinking draws upon logic, imagination, intrusion and systematic reasoning to explore possibilities of what could be and create desired outcome that benefit the user.

Significantly, in spite of substantial amount of literature available on urban planning and problems in the country, it becomes difficult to spell out a definition of slums in clear terms. Various authors, Commissions and Acts define such locations differently, often in a broad and unclear fashion. For example, the Maharashtra Slum Areas Act, 1971, define such pockets as „any area in the state which is unfit for human habitation“. According to the Commissioner of Madras Corporation (1961), „a slum is taken to mean hutting areas with squalid surroundings. It may also be defined as a „thick cluster of small Kachcha houses or huts built on open land in an unauthorized manner.

Minimum basic amenities are lacking in these areas. Protected water supply and drainage arrangements do not exist in these areas“. Given such various sets of meanings, it appears that the definitions have been varying, based mainly on (a) the purpose; (b) the context and (c) the time of the study. Importantly, however, albeit in a somewhat loose fashion, three common attributes that characterize such areas are, (i) those that refer to specific human geographic spaces or situations and not to isolated physical units; (ii) those which are also identified by a combination of physical attributes and not with reference to any one single attribute and (iii) the ones that exist with a considerable range of variations with regard to the manifestation of each one of the physical attributes, significant among which are substandard houses, high density and congestion, excessive and un-proportionate load on amenities, insanitary conditions and often absence or serious lack of services like protected water supply, electricity, drainage, sewerage and clearance of garbage. Generally, such locations are inhabited by the poor and their 1 growth “has often occurred independent of any surge in prosperity through large-scale industrialization.

Hence the level of urbanization (i.e. the percentage of urban to total population) and the rate of urban expansion (i.e. the percentage increase in the urban population) may not always be caused by the „pull“ of economic prosperity and opportunity in the cities; it is sometimes caused by the push from the rural areas due to significant changes in the mode of production in agriculture... in which there is a steady increase in the proportion of the rural population who are compelled to seek a living outside agriculture.

A. Objective of Study

The objective of study is to study the existing condition or scenario of slum as well as slum dwellers of West Zone of Surat and to rehabilitate that slum pocket from that zone as well as to become slum free by giving certain suggestions and recommendations to Surat Municipal Corporation (SMC).

1) Following are the Objectives of Study

- To study the existing scenario and socio-economics of slums of west zone of city Surat.
- Obtaining details about the slums and slum people from SMC.
- Survey of facilities and amenities existing in slum of West Zone of Surat city.
- Survey of their income, its source and expenditure.
- Application to Surat Municipal Corporation for providing required facilities and amenities.

II. STUDY AREA

Surat, one of the oldest mercantile Centre of the south Gujarat region has witnessed a long history of trade and commerce since the early decades of the seventeenth century. However, from such a prominence during this period it fell to the position of a sub-regional urban centre by the end of the eighteenth century. The causes underlying this decline were a combination of various geographical, economic and political factors ranging from Tapi's increasing incapability to house ships in its harbor due to excessive silting to plunders by Shivaji, the fall of Mughal empire and shift of trade southwards to Bombay. Though the decline of trade took away its cosmopolitan trading character, it did not take a long time for a section of the local traders to find avenues of capital employment especially in small scale industries within and around the region. The potential of the Jari industry was realized and revived. Same was true of kinkhab (silk and gold cloth) which had, though limited, but a sure market especially in U.P., Bengal, Punjab, and South India including Deccan and was soon picked up as an important potential sector. Such goods also found their ways to markets in South Africa, Thailand, China and pockets in Persian Gulf. Handloom woven fine cotton cloth too was another major important item of export from the city. This however was not true of the handloom sector, for most of it turned into power looms.

Though during this time, the power loom sector also grew in other parts of the country such as Mysore, Madhya Pradesh and Maharashtra, it was Gujarat that recorded a continuous growth with the city of Surat having its largest share in the state. The sector received a further boost by the governmental policy of decentralizing and providing impetus to the small scale industries since 1956. This robust boost to small enterprises coupled with the recommendation of the Textile Enquiry Committee (1954) to convert ordinary looms into power looms as well as introduction of certain excise concessions to clothes produced in these units aided a substantial growth of this sector in Surat. Surat has been divided into 7 zones. Population has grown by 74% in West zone from 2001 to 2011. The reason behind that is this zone is near the Hazira Industrial Area and connected to National Highway 6 so in the past only the employees of these industries resided in the West zone. But over the recent times, the scenario has changed. Now more population is attracted towards this zone and it has good recreational facilities like gardens, etc. which creates good sustainable environment for living. Most awaited project of outer Ring Road of Surat city has its major portion attached to west zone making it the most demanded zone in near future for living and business

In the three zones of Surat viz., old city, inner periphery and outer periphery, the spatial distribution of population has over the time been changing. Proportionately, 8 unlike in the earlier decades, the old city now houses a much lower population. This has mainly been owing to (i) increasing growth of residential areas in the inner periphery; (ii) bulk of the migrants entering the slums of its outer suburbs; (iii) residential mobility of a section of high and middle income groups towards specific localities in its periphery, and (iv) changes in the actual area of the Corporation limits influencing the related figures. Such spurts in growth within particular wards located especially in its outer suburbs have been in response to the growth and concentration of power looms, diamond processing, petty trade, small industrial units as well as easier availability of dwelling areas in and around the zone. A large proportion of 9 these workers are migrants located mainly in the slum pockets of the city's eastern half. A larger proportion of the slum population is that of males with a share of 58 percent as against 42 per cent of females. This proportion however varies across different migrant groups with a predominance of males among those who have come from the states of Uttar Pradesh and Orissa. Around 60 per cent of the total population belongs to the age-group of 15 to 50 years with a markedly low proportion (4 per cent) of people above 50 years of age. The substantially low sex-ratio of 725 is characterized by even low figures ranging from 520 to 570 in many of the slums in its eastern suburbs and dominated by male migrants of younger age groups. Significantly, as high as 38 per cent of female and 35 per cent of male children in the 6-14 year's age group have never attended school. Among the rest, the drop-out rate among boys is slightly higher than that of the girls.

III. METHODOLOGY

During the visit of slum in West zone of Surat city, it was being observed that there were open urinals and drainage. People throw wastage in open. They are not even provided with proper water supply and cleanliness is not maintained. Roads are also not available for better transportation. The main elements for that we observed for the conditions were poverty, un-education and unavailability of job. This slum is over crowded with many people crammed into very small living spaces.

There are shanty shelters, there squatting and pavement dwelling is another form and is commonly available. The slum we are talking about is located beside the SMIMMER hospital, Sahara Darwaja in Surat. There are much seasonal effects observed due to climatic change. There is excessive heat during summers and water dripping problems and rain water clotting observed during rainy season. There are no provisions of safety to public property and public, many cases were reported. The presence of many buildings and a hospital around there it adds as a dark spot on city premises.

Many people or we can say most of people in slum are going on daily basis wages as they don't have any other source of income, and what has been seen in movies seems to be a bitter dramatically truth that 60% of the ladies over there have the same complaint that their husband or family member does not do anything else than alcoholic consumption. Therefore, how much income comes into their houses are 40 % only, in which they run their houses. There are much more Government properties available, railway tracks and water supply system are the examples of few objects involved. Due to unavailability of sanitation facilities they answer nature's call on rail tracks, since there is no wastage disposal facility the wastage is thrown in open space.

IV. PROBLEM OCCURS

A. Following are the Problem Occurs

- Because of not provided toilet blocks, people of slum use railway tracks for nature's calls. It makes railway tracks so dirty and because of that many disease occurs.
- Because of no provision of services or dustbins for waste disposal, they use to throw their waste things in open and on railway tracks.
- That open waste becomes the sources of generation of insects and spreading the infections to nearby human being.
- Because of not provided proper drainage lines, waste water from drainage line comes to the slum area and it spreads the bed smell in the atmosphere.
- That bed smell disturbs the nearly road users also.
- Sometimes the gas generated from open waste and open drainage, makes the atmosphere unclear and increase the air pollution.
- People of slum dump the waste into open area and because of some liquid and chemically active products it affects the land.
- There is no guardrail on the sides of railways tracks, therefore there is no safety of people of slum for crossing the railway track and go another side.
- There are mostly illiterate and unemployed people.
- If they are workers, they will be on daily bases wages. Mainly unemployment in slum occurs due to lack of guidance about work.
- There are no any awareness or guidance system, by use of that they can get a better employment and make their life some better than present.
- Slum is the scenario of city, which is full of dirtiness, anywhere disposed waste, improper provision of facilities and amenities. This makes the negative effect on the aesthetics of city.

V. POSSIBLE SOLUTIONS

A. Following are the Possible Solutions

- By providing toilet blocks, people will use that toilet block, so response to nature's call in openly and onto railway tracks will be decrease.
- By providing proper disposing services and dustbins, open waste generation will decrease and area will look cleared.
- Therefore, there will be an open land remain which may be useful to any other purposes. There will be no any source, which will act as source of generation of disease.
- By provision of proper covered drainage lines, there will be a decrement into open waste water. This will make the atmosphere clean and clear.
- Bad smell will also decrease along with that, so the generation of infective insects will decrease.
- Slum area is lack of basic facilities, so there should be daily water supply and electricity. How much the needs are required to be fulfilled, health is also important as the needs are, so there should medical facility provided.
- Because, if there will be a medical facility available, then health of people will increase and it may affect the health of city.
- By providing proper guidance services it may helpful to get employment to the people of slum. So they can fulfill their needs.
- By providing education to children of slum area and materials required, illiterate rate can be decreased.
- It is noticed that if there will be a guardrail on both sides of railway tracks with passing space at some intervals, the safety of people who use the railway track to cross and walk will be increase.

VI. TECHNIQUE POSSIBLE TO BE IMPLEMENTED

A. *Ventilated Improved Pit (VIP)*

The single VIP is a ventilated improved pit. It is an improvement over the single because continuous airflow through the ventilation pipe vents odours and acts as a trap for flies as they escape towards the light. Yet, the single remains among the simplest and cheapest toilet systems. Thus, the danger of groundwater contamination due to soil infiltration persists, especially in densely populated area.

1) *Design*

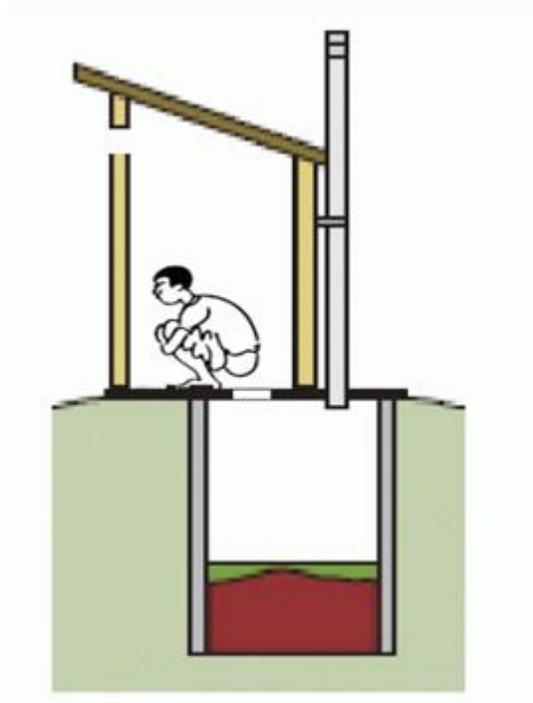


Fig. 1:

B. *Design Consideration*

1) *Performance*

The treatment processes of the faecal material in the pit are limited and stagnant water may promote insect breeding. The problem has been subsequently solved by connecting the pit to the direct drain as such the excreta's are regularly flushed.

2) *Safety*

Safety for the users that are using the rail tracks for the process of excretion. There is reasonably good facilities provided to them under the consideration of the safety factor.

3) *Reliability*

If well maintained and constructed, the excreta is at least collected in the pit and risks of infections are lower.

4) *Aesthetics*

No excretal disposal on tracks and in open land areas, thus enhancing the aesthetics view of area.

5) *Manufacturability*

This pit is designed for slums and peri-urban areas. It is simple to build and can be constructed by the user itself with locally available material.

6) *Assembly*

Wooden planks
Concrete cover
Ventilation Pipe
Connection pipe

As this parts are ready to assemble the time consumption are reduced to a great extent. Once the excavation and lining work is done the assembly of the components can only be done within 3 hours of the work.

7) *Cost*

Excavation – 10,000
Lining – 3,500
Concrete Cover – 1,800
Ventilation Pipe – 1,200
Wooden Planks – 5,000
Water tighten – 4,500

8) *Total Cost – 26,000 Rupees*

As an instance the cost must be seen high but allotting the work to the slum residents will make the project cost effective.

9) *Environment*

Odour and fly nuisances are reduced. Excreta, along with anal cleansing materials (water or solids) are deposited into a pit. Lining the pit prevents it from collapsing and provides support to the superstructure

C. *Effective Drainage Channels*

An open channel or drain system generally consists of a secondary drainage system, with a network of small drains attached (micro-drainage). Each serves a small catchment area that ranges from a single property to several blocks of houses. These small drains bring the water to a primary drainage system, composed of main drains (also called interceptor drains), which serve large areas of the city. Thereafter these drains are generally connected with natural drainage channels such as rivers or streams.

D. *Design Consideration*

1) *Performance*

When constructed will acumination it will perform well and give all the benefits of the underground drainage without much of the maintenance cost and ease of installation.

Once we are install this system it will perform properly atleast 10-15 years without much maintenance cost.

2) *Safety*

To be found in smaller and larger urban as well as rural areas, in coastal areas often influenced by tide level of sea. Furthermore they are prone to flooding or clogging in rainy season

3) *Reliability*

Open drains are prone to blockage caused by garbage and solids.

4) *Aesthetics*

No waste disposal in open land areas, thus enchasing the aesthetics view of area.

5) *Manufacturability*

The open drains collect storm and sometimes sewage, then drain it off into rivers, lakes or agricultural irrigation canals. Open drains are easy to maintain but must be well organised.

6) *Assembly*

Concrete wall
Screening wire

As this parts are ready to assemble the time consumption are reduced to a great extent. Once the excavation and levelling work is done the assembly of the components can only be done within 1 hours of the work.

7) *Cost*

Excavation – 10,000
Levelling – 2,500
Concrete wall – 135 per unit (1 metre length) $135 \times 35 = 4725$
Screening wire – 4,500
Water tighten – 4,000

8) *Total Cost – 25,725 Rupees*

As an instance the cost must be seen high but allotting the work to the slum residents will make the project cost effective. Compared to underground sewer systems (e.g. conventional sewer or separate sewer) open drains are a less expensive solution. The precise

cost depends on local conditions. If terrain is very steep, extra construction has to be fabricated to slow down the velocity. Also very flat areas could raise the budgeted cost (deep, or where groundwater table is high, wide excavation). Consideration of community participation could have a positive offset on the overall costs. For example voluntary labour can permit significant savings in cost, which can be an important consideration for most municipalities in developing countries, due to very limited availability of funds to invest in infrastructure. A typical value for the annual cost of maintenance would be about 8% of the construction cost of the system.

9) Environment

Odour and fly nuisances are reduced. Solid waste, are easily removed.

Lining the pit prevents it from collapsing and provides support to the structure.

VII. CONCLUSION & RECOMMENDATIONS

The purpose of the paper was to highlight not just the overall status of the Surat slums but give an inter-zonal picture regarding the issues. With regard to factors affecting health conditions and the health care parameters it is observed that the residents faced problems of sanitation because of open canals and ill connected drainage conditions. The following strategy may be looked into for improving living conditions in slums. Wherever in situ development is feasible, such slums shall be identified and taken up for in-situ improvement for the provision of basic facilities to make the areas habitable. The slums located in congested and unhygienic areas of the urban centers wherein equitable distribution of space is not feasible should be cleared and tenement schemes put up. Wherever neither tenement scheme nor in-situ development is feasible, rehabilitation nor should resettlement in tenements in nearby locations be adhered to. It has been hoped that if the recommended shelter strategies are implemented based on the affordability level of the slum dwellers of the West zone of Surat, they shall get a chance of having affordable house, which will be not only fulfilling one of the basic needs of human survival but also pave the way for steady socio-economic development in their lives.

REFERENCES

- [1] QEH Working Paper Series – 07, “Slum Dwellers in Indian Cities: The Case of Surat in Western India”, Biswaroop Das, Centre for Social Studies* South Gujarat University Campus UdhnaMagdalla Road Surat
- [2] Patel Achal, Prof. HimanshuPadhya, “Rehabilitation of Slum: A Case Study of West Zone of Surat City”, International Journal of Engineering Development and Research, Vol. 2 (3), 2014.
- [3] “Rajiv AwasYojana: Guidelines for Slum-free City Planning”, Ministry of Housing & Urban Poverty Alleviation, Government of India.
- [4] “Guidelines for Preparation of a Slum Free City Plan of Action”, Rajiv AwasYojana, Ministry of Housing and Urban Poverty Alleviation, Government of India.
- [5] “Slum Upgradation”, Social Welfare Departments, Surat Municipal Corporation.
- [6] “Gujarat Slums Rehabilitation and Redevelopment Policy, 2010”; Government of Gujarat.
- [7] “Slum Areas (Improvement and Clearance) Act, 1956”; Government of India.
- [8] <http://www.suratmunicipal.gov.in/slumupgradation/JnNURM>.
- [9] http://www.suratmunicipal.gov.in/slumupgradation/slum_main
- [10] http://www.mhupa.gov.in/w_new/RAY%20Guidelines