Development of Urban Poor through Affordable Housing-Proposal for Surat City, Gujarat, India

Jay Dalal, Palak Agrawal, and Dr Krupesh Chauhan

Abstract—Slum constitutes the most persistent problem of urban life. The irresistible desire for shelter compels the poor to encroach on any vacant land. Unhealthy environment, poor housing condition, lack of basic minimum sanitary facilities prevailing in the slum have resulted in illness, disease and socially disturbances apart from being most unesthetic spots to the city landscape. The study area is Surat City of Gujarat, India having population 44.62 Lacs (census 2011) and area 326.52 sq km. Surat has observed rapid urbanization in last three decades resulting in population growth in an alarming way which has been accentuated by continuous migration of the rural population in search of better working opportunities in the city. Poor affordability due to the ever increasing cost of housing in the city has degraded the housing conditions, aiding the growth of slums. This paper inculcates in it, the existing scenario and socio-economics of Urban poor, the issues faced by them in the study area and an appropriate affordable housing proposal for the urban poor of Surat city.

Keywords—Affordable housing, Development, Slum, Urban poor

I. INTRODUCTION

A UN Expert Group has created an operational definition of a slum as an area that combines to various extents the following characteristics: inadequate access to safe water; inadequate access to sanitation and other infrastructure; poor structural quality of housing; overcrowding; and insecure residential status. Slums are usually characterized by urban decay, high rates of poverty, illiteracy and unemployment or lack of personal/community land ownership. They are commonly seen as "breeding grounds" for social problems such as crime, drug addiction, alcoholism, high rates of mental illness, and suicide. In many poor countries they exhibit high rates of disease due to unsanitary conditions, malnutrition, and lack of basic health care. However, some like Dharavi, Mumbai, are a hive of business activity such as leather work, cottage industries, etc. Dharavi is often referred to as one of the World’s 30th and Asia’s largest slum, is an urban district in the centre of Mumbai covering approximately 175 hectares of land. Rapid urbanization, migration of the underprivileged from rural areas to urban centers and acute shortage of housing are the main attributes in the formation of slums. Slum springs up and grows on both public and private land. Many cities have slums population as high as 35 to 40 %. Rural depopulation and overpopulation with thousands arriving daily into the cities make slum clearance an uphill struggle. [2]

World Bank defines poverty as “Poverty is a pronounced deprivation in well-being, and comprises many dimensions. It includes low incomes and the inability to acquire the basic goods and services necessary for survival with dignity. Poverty also encompasses low levels of health and education, poor access to clean water and sanitation, inadequate physical security, lack of voice, and insufficient capacity and opportunity to better one’s life”. In parts of India, slums are known as cherries, bastis, jhuggis, zopadpattis etc. in different languages. Slums have been increasing vary rapidly and slum population has been growing at rates much faster than the urban population growth rate. Therefore here is pressure to understand the slums in right perspective.

Surat, the second largest city in Gujarat state has a dominant role in the sphere of economic and industrial activities in South Gujarat region. Rapid urbanization has been observed in last three decades and many industrial set-ups have been surfaced in a big way in and around city resulting in population growth increases in alarming way. The problem has been accentuated by continuous migration of the rural population in search of better working opportunities in the city.

II. NEED OF STUDY

The challenges of sustainable urbanization, urban planning and governance need insights on the policy level. The urban poor population in urban area is alarmingly increasing. To meet the demand of the future population of Surat city it is very significant to study the appropriate method of planning and management which can lead to have the effective facilities for urban poor and as well as homeless people to improve their quality of life. The main aim of the study is to analyse the existing situation of urban poor in South and South-East zone of Surat city and from that develop affordability modal for urban poor.

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III. STUDY AREA

The study consists with Surat City of Gujarat having population 4.462 million [3] and area 326.52 square kilometer. The map is shown in Fig. 2. The city is divided into seven zones and in 114 wards of the Municipal Corporation. The study is limited to the South and South-East zone of Surat city. The present study addresses the issues of shelter for urban poor in the perspective with Surat city as the case under investigation.

IV. OBJECTIVE

To study the existing scenario and socio-economics of Urban poor in Surat city; thereby develop an appropriate affordable housing proposal for the urban poor of Surat city.

V. HOUSING SHORTAGES AMONG THE SOCIO-ECONOMIC CATEGORIES

The Classification of Economically Weaker Section (EWS) and Lower Income Group (LIG) households are based on household income. EWS households are those with income up to Rs. 5000 per month and LIG households are those with income between Rs. 5001 and 10000 per month. Three-fourths of the shortage is in the EWS category and another quarter of the shortage is among the LIG category. [1]

<table>
<thead>
<tr>
<th>Category</th>
<th>Distribution of Housing Shortage among different Economic categories as on 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number (in million)</td>
</tr>
<tr>
<td>EWS</td>
<td>10.55</td>
</tr>
<tr>
<td>LIG</td>
<td>7.41</td>
</tr>
<tr>
<td>MIG and above</td>
<td>0.82</td>
</tr>
<tr>
<td>Total</td>
<td>18.78</td>
</tr>
</tbody>
</table>

Source: Ministry of Housing and Urban Poverty Alleviation

The National Sample Survey Organization (NSSO) in the Ministry of Statistics and Program Implementation, Government of India has released the report of a nation-wide survey carried out by it during July to December 2002 on the on the condition of urban slums. For the purpose of survey, a slum was defined as a compact settlement with a collection of poorly built tenements, mostly of temporary nature, crowded together usually with inadequately sanitary and drinking water facilities in unhygienic conditions. Such an area, for the purpose of this survey, was considered as “non notified slum” if at least 50 households lived in that area. Areas notified as by the respective municipalities, corporation, local bodies or development authorities are treated as “notified slums”.

The number of people living in slums in India has more than doubled in the past two decades and now exceeds the entire population of Britain, the Indian Government has announced. The number of people living in slums is projected to rise to 93 million or 7.75 percent of the total population.

VI. PLANNING PROPOSALS

In these planning proposals, The In-Situ redevelopment model is to be considered for improving quality of life of the slum dwellers and also they will get better infrastructure facilities.

A. In-situ proposals

1. Row House

In this proposal Row houses are provided for the slum dwellers. This kind of proposal is useful where small area of...
land and less number of slum dwellers are living on particular slum pocket.

![Fig. 3 In Situ Redevelopment of Harijanvas, Vadod Gam, Surat](image)

In this proposal, one living room and one kitchen is provided. There is no bathroom and toilet in each and every units. Common bathrooms (5 numbers) and toilets (6 numbers) are provided for every 10 units. Toilets and bathrooms are provided common because that can be useful in reduction in cost of every units. [5]

There are total 72 number of households are living in the existing harijanvas of Vadod gam. In proposal, 9 metre and 7 metre wide internal roads are provided. The area of one unit is 20.0 squaremetre and construction cost Rs. 8070 per squaremetre (750 rs per square feet) is assumed. So that the cost of one unit is Rs. 1.6 lakhs.

2. Low Rise Apartments

In this proposal, low rise (G+4) and row houses are provided on the different sites of existing slum pockets. Low rises are provided where the huge number of slum dwellers is living on one slum pockets. Detail drawing and its specification are described which are shown in fig 5.

![Fig. 4 Current Scenario if Sanjay Nagar 2, Limbayat, Surat](image)

This site is located in the South-East zone of Surat city. There are total 1856 households (slum dwellers) living on the existing site which is situated at Limbayat. In this proposal total 52 low rise buildings (G+4) are provided with public amenities, 2 gardens and 9 metre wide internal roads. In the public amenities, 2 schools, one shopping complex and one police station is provided. In low rise building there are total 8 units on each floor so 40 units are in one building. The people who are living in this existing slum pocket, they will get good housing units and public amenities and the distance from home to work place is minimum so that low rise building is provided on existing slum pocket. In this proposal total area of site is 6.14 hectare. The land use pattern of proposed site is shown in table II.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Area (Hectares)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>3.77</td>
<td>61.43</td>
</tr>
<tr>
<td>Garden</td>
<td>0.66</td>
<td>10.78</td>
</tr>
<tr>
<td>Public Amenities</td>
<td>0.68</td>
<td>11.05</td>
</tr>
<tr>
<td>Roads</td>
<td>1.03</td>
<td>16.73</td>
</tr>
<tr>
<td>Total</td>
<td>6.14</td>
<td>100</td>
</tr>
</tbody>
</table>

![Fig 5 Proposed In Situ redevelopment of Sanjay Nagar 2, Limbayat, Surat](image)

![Fig 6 Unit Plan of Low Rise Building](image)

http://dx.doi.org/10.15242/IIE.E1213529
This is unit plan of low rise which is provided on existing site of Limbayat in the planning proposal of redevelopment of existing slum pocket. There is one living room (2.5x4.6 metre), kitchen (2.2x2.3 metre) and one bathroom and one toilet are provided. There are total 8 units are provided in each floor. The area of one unit is 23.96 square metre. The total area of existing site is 6.14 hectare and no of units are 2080.

The following infrastructure facilities are divided into two parts one is Physical infrastructure and another one is Social infrastructure. In this proposal following physical infrastructure facilities are proposed.

i. Drainage: Underground R.C.C. pipe drain of 250 milimetre diameter. Location of manholes at 30 metre distance. The connection will be made in existing SMC trunk line.

ii. Water Supply: Underground pipe line of minimum 150 milimetre will be laid & connected with SMC main trunk line.

iii. Streetlight: 6.0 metre G.I. pipe poles at 20 metre distance will be laid with tubelight fittings.

iv. Roads: All internal roads of 7.5 metre and 9 metre width will be constructed with residential street type design.

v. Pavement: All surrounding areas will be made Pucca by paver block.

vi. Solid waste collection: In this door to door collection of garbage will be provided for the slum dwellers.

Whereas the Social Infrastructure like Anganwadis, Dispensary, Library, Vegetable Market, Hawkers Space, Children’s play area, Garden, Junction Development, Shopping Centre are provided in proposed redevelopment of Sanjay Nagar, Limbayat. By providing this type of infrastructure and housing facilities to the slum dwellers, it will be helpful to improve their quality of life.

All infrastructure Facilities and their maintenance cost is provided by the Urban Local Body (Surat Municipal Corporation) and the 50% of the total project cost is given by Central Government and 20% of the total project cost is given by the State Government. [4]

Cost of construction is assumed to be 8600 Rs. per square metre (Rs. 800 per square feet) so that the construction cost of one unit is Rs. 2.06 lakhs. Total Construction cost of redevelopment site is approximate Rs. 4285 lakhs. It will include materials like fly ash brick, earth quake proof design, R.C.C. frame for doors, mosaic tiles, Kota platform, Brick bat sitting, Distemper white colour on walls, Nominal plumbing, Sand faced plaster on outer wall, P.V.C. doors for toilets & flush doors for other, Under Ground & Over Head tanks with pump, Internal 12mm smooth lime plaster which make house affordable for those who don’t pay more.

The total cost including Construction cost as well as Infrastructure cost is shown in table III.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Total Cost (in lakh)</th>
<th>Cost per unit (in Lakh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction cost</td>
<td>4285</td>
<td>2.06</td>
</tr>
<tr>
<td>Infrastructure cost</td>
<td>478.4</td>
<td>0.23</td>
</tr>
<tr>
<td>Total cost per unit</td>
<td></td>
<td>2.29</td>
</tr>
</tbody>
</table>

The comparison between this proposal to the proposal given by SMC is shown in table IV.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>SMC proposal</th>
<th>Proposed proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost per unit</td>
<td>2.51 lakhs</td>
<td>2.29 lakhs</td>
</tr>
<tr>
<td>Unit area</td>
<td>25 square metre</td>
<td>23.69 square metre</td>
</tr>
<tr>
<td>Road width</td>
<td>7.5 metre</td>
<td>9 metre, 7.5 metre</td>
</tr>
<tr>
<td>Building Structure</td>
<td>G+3</td>
<td>G+4</td>
</tr>
<tr>
<td>No of rooms per unit</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>No of units in one building</td>
<td>16</td>
<td>40</td>
</tr>
</tbody>
</table>

Table IV shows the total cost of one unit is 2.29 lakhs, where as in SMC proposal of providing EWS housing the cost of one unit is 2.51 lakhs which is slightly higher. So this proposal is an affordable compared to SMC proposal. Another point is in SMC proposal, 2 rooms are provided in each unit where as in this proposal, only one room is provided because it is sufficient for them.

So by this way this proposal is better than SMC proposal and is affordable and reliable to the Slum dwellers.

B. Proposals based on Affordability Criteria

There are total 118 samples are surveyed in study area so willingness to monthly pay varies at all samples which are collected. In this proposal mainly four divisions based on built up area of single unit are proposed which are shown in table V.

<table>
<thead>
<tr>
<th>EWS Type</th>
<th>Built up area(Sq. mt)</th>
<th>Total Cost of Unit (Lakhs)</th>
<th>GOI share per unit (50%) (Lakhs)</th>
<th>GOG share per unit (20%) (Lakhs)</th>
<th>Beneficiary (Lakh)</th>
<th>SMC (Lakh)</th>
<th>Installment/EMI (Rs. per month for 10 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>16</td>
<td>1.38</td>
<td>0.69</td>
<td>0.28</td>
<td>0.25</td>
<td>0.17</td>
<td>208.33</td>
</tr>
<tr>
<td>B</td>
<td>18</td>
<td>1.55</td>
<td>0.775</td>
<td>0.31</td>
<td>0.30</td>
<td>0.165</td>
<td>250</td>
</tr>
<tr>
<td>C</td>
<td>20</td>
<td>1.72</td>
<td>0.86</td>
<td>0.344</td>
<td>0.30</td>
<td>0.216</td>
<td>250</td>
</tr>
<tr>
<td>D</td>
<td>23.96</td>
<td>2.29</td>
<td>1.145</td>
<td>0.458</td>
<td>0.35</td>
<td>0.337</td>
<td>292</td>
</tr>
</tbody>
</table>
From table 5 four different types of EWS housing are proposed based on their affordability. In that there are two ways to distribute housing which are

1. **In Case shifting of hutments**

   The huts which are situated on the bank of river Tapi, bank of Bay, near by canal road and last but not list is huts on the reserved plots are shifted first.

2. **Direct allotment through Draw**

   The hutsments which are remaining, these will be shifted through draw system. In this draw system, an advertisement will publish in the local news paper than draw will be conducted. In that a chit will be given to all hutments. The housing number is printed on each chit. One by one come and open his/her chit and than whatever the number is printed on particular chit, the house will be given to that particular person. So by this way draw system is carried out.

   In this proposal an affordability of a person is low than house area of 16 and 18 square meter are to be provided and 20 square meter and 23.96 square meter size of unit will be provided for those whose affordability towards shelter is higher than the previous case. So by this way house is given to the urban poor based on their affordability.

**C. Rental Housing**

There has been a high rate of migration of the poor and EWS households to the cities and towns in search of livelihood. This has led to expansion of the existing slums and creation of new ones. To address this problem, rental housing blocks are required to be constructed and maintained for accommodating the above categories of households. In pursuance of this programme, the government shall provide the land to ULB for creation of affordable rental housing stock.

1. **Implementation Mechanism**

   i. The private developer has to develop the rental housing block with proper infrastructure facilities like water supply, electricity, provisions for sewerage and solid waste before handed it to the government.

   ii. The government shall provide land at concessional cost (government benchmark price) for this purpose.

   iii. Only BPL, EWS and LIG categories will be eligible for staying in the rental houses.

   iv. The beneficiary has to pay a rent not exceeding Rs. 1,500/- per month for EWS unit and Rs 2,000 for LIG unit, as decided by the ULB/agency concerned subject to revision from time to time.

   v. The ULB shall be responsible for Operation Management of the housing blocks.

   vi. 25% of the rent collected shall be utilized towards the maintenance of houses and infrastructure.

**VII. CONCLUSION**

It has been hoped that if the recommended shelter strategies are implemented based on the affordability level of the slum dwellers of the South and South-East 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 socioeconomic development in their lives.

**VIII. FUTURE SCOPE OF STUDY**

The study area is South and South-East zone of Surat city. Survey at large level shall be conducted to have exact picture of their socioeconomic and environment condition. System Dynamics model can be developed and employed to understand the various functions of the slum dwellers in the urban system. Simulation work can also be done in the model to arrive at plausible alternative decisions to evolve optimal policies and feasible programs for the development of the slum dwellers.

**ACKNOWLEDGMENT**

Sincere thanks to Surat Municipal Corporation (SMC) and S V National Institute of Technology, Surat for providing preliminary data. Urban Poor Survey helped us to understand the situation in a better manner.

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