

Evaluation of Slum Rehabilitation Projects in Bangalore: A Case Study of Rajeshwarinagar Slum

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Abstract: -Evaluating the slum rehabilitation projects is crucial for identifying the shortcomings in the planning and implementation processes. This would help in initiating suitable planning interventions, which is required to be incorporated in the forthcoming slum rehabilitation projects. Evaluation determines the extent of project implementation is successful in terms of its effectiveness, sustainability of results, impact and contribution to capacity development. Bangalore is the fifth largest metropolitan cities in India. The city has been experiencing a high population growth including slum growths. There are number of slum, which have been selected for rehabilitation projects under the centrally sponsored scheme namely Basic Services for the Urban Poor (BSUP) submission project of Jawaharlal Nehru National Urban Renewal Mission (JNNURM) programme. Rajeshwarinagar slum was selected for in-situ rehabilitation with 304 dwelling units in 12 blocks. The paper presents the outcome of the evaluation study and insights of planning and implementation of Rajeshwari Nagar Slum project highlighting the physical and socio-economic impacts.

Key words: Rehabilitation, Evaluation, Impact, Project, In-situ Development.

I. BACKGROUND OF SLUMS IN BANGALORE

Bangalore is the fifth largest metropolis (8.40 million as per 2011 Census) in India and it is globally recognized as Silicon Valley and Information Technology capital of India. Bangalore city has 576 slums, which constitute 7,24,441 slum population and 1,64,786 households as per 2014 figures of the Asha Kiran Mahiti of Karnataka Slum Development Board; of which 232 are declared slums and 344 are undeclared slums. Seventy six per cent of the slum population live below poverty line and hardly 22 per cent of the slum population has monthly income less than Rs.3000/-. The housing is the most vulnerable condition and about 14 per cent are still living in kutchha houses and 42 per cent living in semi-pucca houses and rest the 45% of the housing stock are pucca houses. Forty two per households depends on public taps and 18 per cent household do not have access to water supply and only 40 per cent households have individual tap connections. Twenty Seven percent household do not have sewer connection and they mainly depend on community toilets, but, 6% still practice open defecation and 63 percent houses have access to storm water drains.

II. SLUM REHABILITATION PROJECTS UNDER BASIC SERVICES FOR URBAN POOR (BSUP)

The centrally sponsored programme namely Jawaharlal Nehru National Urban Renewal Programme (JnNURM) was introduced in 2005. The Basic Services for the Urban Poor (BSUP) was one of the Components of BSUP. The BSUP project was planned in three phases. In the first phase, it was planned to cover 45 slums covering 50000 population to consists of 23 in-situ rehabilitation projects and 22 relocation projects. The average density was 322 dwelling unit per hectare. The second phase consisted of 12 slums to cover 14000 slum dwellers, of which 5 were planned for in-situ rehabilitation and 7 for relocation. It was also planned to cover 15 slums covering 16000 slum dwellers in the third phase of the BSUP project. However, Karnataka Slum Development Board (KSDB) has identified 16 slums including Rajeshwarinagar slum for rehabilitation in the second phase considering that the slum is the most vulnerable slum in terms of socio-economic conditions, physical infrastructure viz. water supply, toilets, pavements, street lights and land title. Private consultants were appointed by KSDB for preparation of topographical sheets, layout plans, dwelling-unit plans. Estimates were prepared as per PWD-schedule of rates. Detailed Project Report was prepared and submitted to State level sanctioning committee (SLSC) through Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC), the state level nodal agency and on recommendation of the SLSC the project was approved by the central sanctioning and monitoring committee in 2007.

III. RAJESHWARNAGAR SLUM

Rajeshwarinagar slum is located in the ward number 179 of Bruhat Bangalore Mahanagar Palike (Bangalore). The slum existed for more than 40 years. It is situated on an abandoned quarry pit at 500 about meter from Banashankari Temple. The City Coporation had been using this quarry pit for dumping the municipal solid waste including debris. It had access from Bangalore-Kanakapura state highway. The people of this slum are living in vulnerable conditions particularly in katcha houses. There was no proper access to water supply and sanitation. People have built their temporary houses according to their own convience.



Fig.1 Situation before the Rehabilitation in Rajeshwarinagar slum

IV. RAJESHWARINAGAR SLUM REHABILITATION PROJECT

Rajeshwarinagar slum was selected under the Second Phase of JNNURM sub-component of BSUP project for in-situ-rehabilitation project with 304 dwelling units in 12 blocks. As the site was a quarry pit and it was not suitable even for single floor construction under normal circumstances. The SBC of soil was of very low that was 2 to 3 tons per square meters. However, as per the suggestions given by soil mechanics experts, it was decided to excavate the entire area up to 4 m. from ground level and fill the excavated area with gravelly hard soil. The improvement to site conditions has enabled for revision of layout plan to accommodate 496 dwelling units. The revised layout plan is depicted in fig.2. Eight blocks of 24 dwelling in each unit and one block of 16

dwelling units of totalling 208 dwelling units were completed by June 2013. When work was in progress, additional 288 dwelling units were added up and the revised layout was approved by KSDB in December 2012. Though, the project period was planned for 2009 initially but it was expected to be completed by 2011. However, due to technical reasons like poor soil conditions, water table was available at shallow depths and land disputes, beneficiaries non co-operation, reluctance to accept multi storied (G+3) dwellings, change in locations and finally 09 slums were finally identified to accommodate in this slum. Revised DPR was prepared without changing the number of dwelling units (3151 dwelling units) and biometric identification of beneficiaries was prepared and submitted along with the revised estimated cost of Rs.124.27 crore, which was subsequently approved in August 2011. It was planned to accommodate the people temporarily in transit sheds for this in-situ development project. Each household was given 12 tin sheets to set up temporary shelter in the site itself and construction was taken up in phases. Finally, it was planned for in-situ rehabilitation project of 304 dwelling units consisting of 12 blocks. The contract was awarded to D.E.C. Infrastructure and Projects (India) Private Limited, for implementing fast track technology projects.

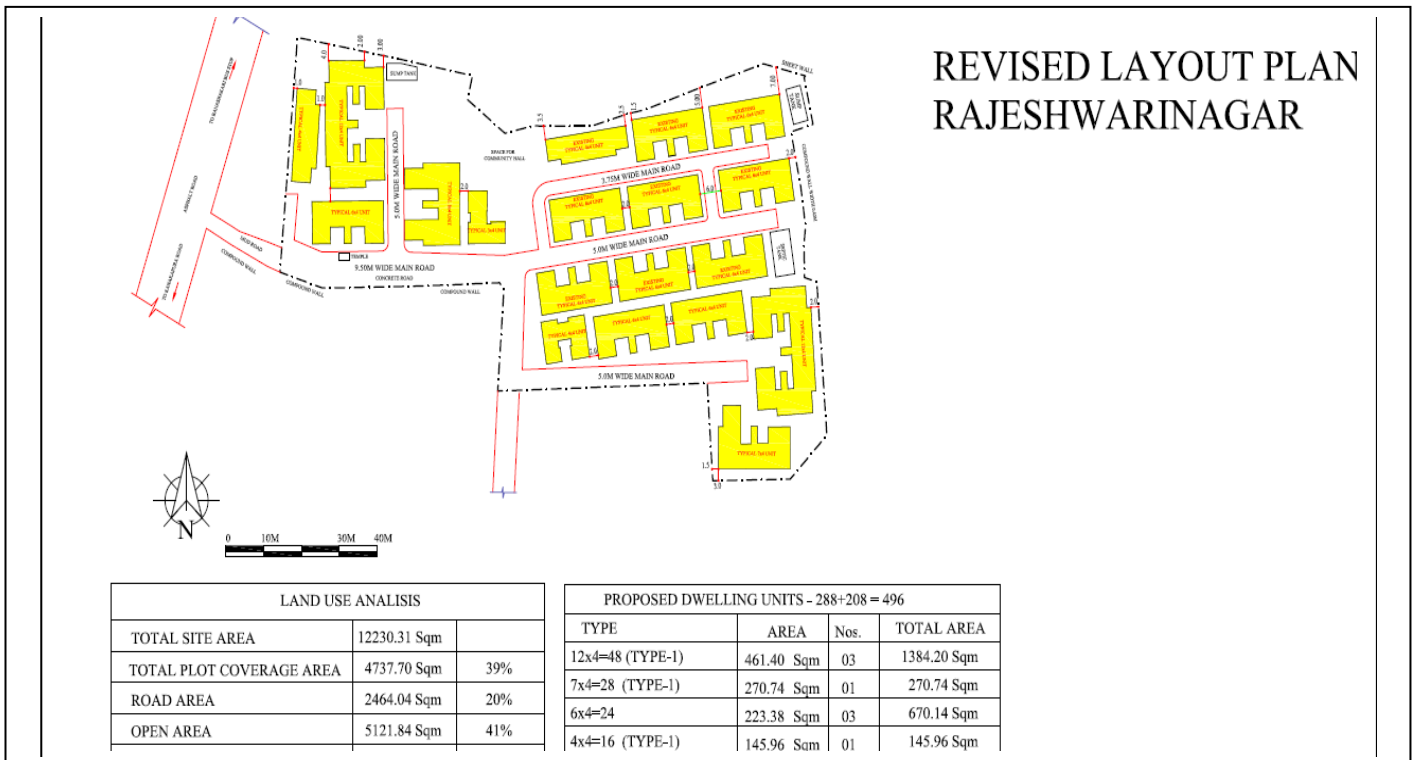


Fig 2. Layout Plan of Rajeshwari Nagar

VI. IMPACT ASSESSMENT

A. Housing

There hundred and four beneficiaries have been identified and they were given bio-metric identification, of which 208 dwelling units have been occupied. However, no title deeds or procession certificates are being issued to the beneficiaries yet. There are 1474 urban poor will be benefited title entitlements. All the original allottees are residing in the dwelling units and they are satisfied with carpet area, quality of housing and ownership of dwelling units. Only 25% of the beneficiaries expressed the difficulty in accessing top floors. The overall satisfaction of dwelling units is 87%.

b) Basic Infrastructure

Water supply: The locality is not getting water supply from the Municipal Corporation. The authority has dug five bore-wells, of which only one bore-well was successful. They have been provided public taps by drawing water from the Municipal water supply. None of the household has been provided with individual water connection and not metered. **Sanitation:** Public toilets are constructed by BBMP and is being utilized by all slum dwellers, as water connection is yet to be provided to these toilets. Each unit has been designed to have both bathing and water closet facilities. Wastes are being dumped in the set back areas, open drains and opens spaces. There is no provision of dustbins or second collection bins provided in the locality. However, the BBMP clear the solid waste twice a week. Storm water box drains of size 0.6mx0.45m has been constructed but the waste water and garbage is dumped in these drains.

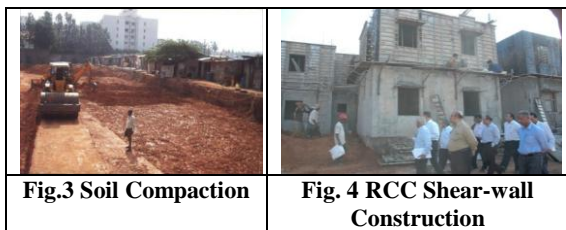


Fig.3 Soil Compaction

Fig. 4 RCC Shear-wall Construction

V. TECHNICAL SPECIFICATIONS

Fast track construction technology was employed in the project. The specifications to include RCC footing, pedestal, 120mm thick external wall and 100mm thick internal wall monolithic shear wall and roof slabs. Polymer coated RCC door frames manufactured as per specifications of Nirmithi Kendra, Bangalore. Mild steel door for rooms and PVC doors for toilets/ bath Steel glazed windows/ ventilators. White wash for internal painting and water proof cement external painting and cement concrete flooring were employed.



Fig 5. Floor Plan

The layout plan was revised to accommodate 496 dwelling units. Minimum 5.5 m wide setback was not adhered in the layout with a view to accommodate optimum number of dwelling units. Cluster design was employed with higher carpet area of 27 square meters, which has improved circulation within dwelling units and ensuring effective utilization of spaces. As 2.0 meter distance has left between the dwelling unit blocks, and it is insufficient to meet light/ ventilation and protection in case of fire hazards for fire engine. Project monitoring was carried-out by appointing an independent Project Management Consultants (PMC). Field lab was set up at the site for soil and construction materials testing. PMC and KSDB Engineers along with the contractors have made daily visits for inspections and reports were submitted regularly. Third party inspection and monitoring agency was also appointed by the Central Government, which submits Quarterly physical, financial progress and compliance report.



Fig. 6 Open drains are filled with Solid Waste

Economic Impact: Detailed Project Report has envisaged that the training to be given to 500 slum dwellers from Government Tool Room and Training Centre and 500 slum dwellers at KEONICS. However, no beneficiaries have received any training. The rehabilitation project has not directly created any jobs, but as construction industry is one of the contributors to the city's economy (7% of GDP), the labour force finds opportunities for work. The labour available in the slum is not being utilized due to lack of skill in the new technology being adopted in the project. As per the primary survey, it has been observed that 70% of the people's monthly income is in the range of

Rs.5000 to 10000; 20 % have more than 10000 and rest are below 5000 income group

Table 1: Occupation Pattern

Occupation	%
Coolie	42%
Vendor	23%
auto driver	19%
Tailor	4%
Maid	8%
Carpenter	4%
Others	4%

Source: Primary Survey, 2013

d) Social Impact

All the household have access to social infrastructure namely primary school within 2 kms. There is no incidence of Infant Mortality and Maternal Mortality MMR in this area. About 19% of the population are in the child age group of 6-14 years.

VII. SWOT ANALYSIS

STRENGTHS
1. Shear wall technology used for construction of dwelling units
2. Cluster design of dwelling units and increased carpet area (27.88sqm).
3. In-situ Development with proximity schools, medical facilities, market and cultural centre.
WEAKNESS
1. 04 bore wells in the layout have no water. Municipal water from the municipal line in the vicinity being used
2. Solid waste disposal in the side drains and open areas within the locality.
3. Partial implementation of zoning and building regulations.
4. High dwelling unit density (406) above the average 302 dwelling units/ hectare approved in the second phase DPR. These energy intensive structures will add to stress on existing infrastructure like power and water supply.
OPPORTUNITIES
1. Environment improvement with adequate community facilities on completion of project
2. Skill upgradation of existing slum dwellers who can be utilized to complete the project.
3. Strengthen the welfare association which is registered to enable access to income generating activities and access to formal loan facilities
4. Resident welfare association to be involved in the maintenances of the common areas and structures.
THREATS
1. Sustainability
2. Attrition at upper level dwelling units.

VIII. CONCLUSIONS

The slum re-habitation project was initiated in the Rajeswarinagar Slum under JnNURM project. The in-situ

rehabilitation which was carried out has contributed for improving the quality of housing. The project has benefitted largely to the urban poor with satisfaction in terms of quality of construction, sustenance of infrastructure and its maintenance and community involvement. The outcome of the impact study is that the project has yielded good result in benefitting the urban poor to improve the quality of life and it can be replicated in similar areas.

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ISSN: 2277-3754

ISO 9001:2008 Certified

International Journal of Engineering and Innovative Technology (IJET)

Volume 4, Issue 8, February 2015

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