

Impact of Slum Rehabilitation Project in Bangalore City: A Case Study of Pantharpalya

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Abstract --Planning interventions for the inclusive growth of cities gaining importance in recent years. as a society with increasing urban poor with insecure tenure land and inadequate livelihood options, which would cause social and economic strife. Bangalore is one of the fastest growing cities in Asia and it is at the crux of problems associated with rapid urban development, which constitute 576 slums. A rehabilitation project carried out in Pantharpalya Slum under the Basic Services for the Urban Poor (BSUP) sub-mission project of Jawaharlal Nehru National Urban Renewal Programme (JnNURM) in Bangalore. This paper depicts the planning and implementation of slum rehabilitation project of Pantharpalya slum including its constraints and physical and socio-economic impact.

Index Terms- 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 PROJECT

The centrally sponsored programmes [1][2]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, 45 slums were planned to cover 50000

population which consist 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 projects. In the third phase, it was intended to cover 15 slums of 16000 slum dwellers under BSUP project. The Karnataka Slum Development Board identified 30 slums including Pantharpalya slum, which was selected in the first phase for rehabilitation project by considering it as one of the most vulnerable slums in terms of socio-economic conditions, physical infrastructure (water supply, toilets, pavements, street lights) and land title.

III. CASE STUDY OF PANTHARPALYA SLUM

Pantharpalya slum is situated in Ward Number 31 (Nayandanahalli Ward) of Bruhath Bangalore Mahanagar Palike. The slum existed for more than 30 years. It occupied in an extent of 20000 sq.mts. It is bounded by Bangalore-Mysore State Highway on eastern side, storm water drain on western and southern sides and 5.5mt wide road on northern side.

The condition of housing was most vulnerable and the majority of the people lived in kutchha and semi-pucca houses (see fig.2). The situation in terms of socio-economic condition and physical infrastructure namely water supply and sanitation were in vulnerable conditions. People were erected houses according to their wishes and there was no security of land tenure.

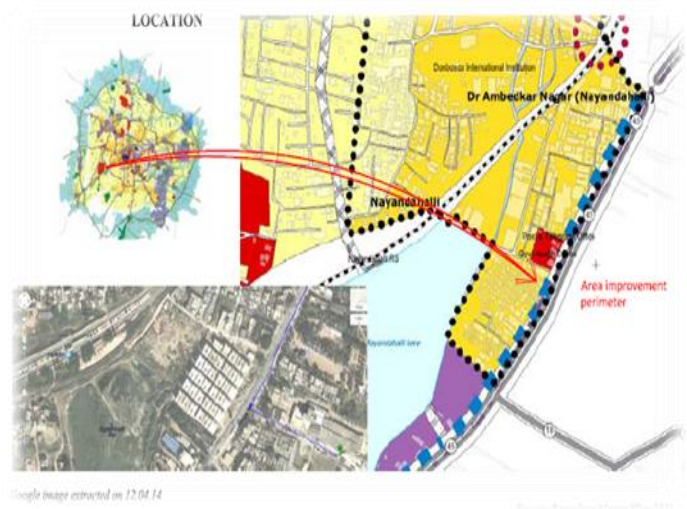


Fig.1 Pantharpalya Slum in Bangalore



Fig.2 Housing Condition of Pantharpalya Slum

IV. SLUM REHABILITATION PROJECT

Pantharpalya slum was selected for in-situ rehabilitation with a funding from Jawaharlal Nehru National Urban Renewal Mission project under centrally sponsored scheme. In the beginning, it was planned for construction of 896 dwelling units in 24 blocks of 32 dwelling units each; later, the project was re-designed for construction of 1088 dwelling units to cover 34 blocks. Private consultants were engaged to prepare Detailed Project Report (DPR) which includes topographical sheets, layout plans, dwelling unit plans. Estimates were prepared as per Public Works Department's schedule of rates and submitted to State level sanctioning committee (SLSC) through Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC) in 2006, but the project was revised and approved in 2011 with an estimated cost of Rs.261.17 crore (cost of the dwelling unit was revised from Rs 1.25 lakhs to Rs.1.80 lakhs). The layout plan is shown in fig.3. The residential land use was increased from 34.5% to 43.5%. Open spaces was reduced from 8% to 3%, civic amenities was reduced from 19% to 9%. The dwelling unit density was increased from 410 dwelling units/ hectare to 516 dwelling units/ hectare.

The cluster design approach confirms partially to the prescribed neighbourhood design standards. The provision

of openings has been to ensure adequate lighting and ventilation, which are some of the factors encouraging a high degree of human activity outdoors, including cooking, washing and sleeping. The typical block plan is shown in fig.4, which reflects the details of designing efficient building envelopes.

The carpet area for each dwelling unit and habitable rooms been on par with the building byelaws and National building code and the details are given in the table 1.

Table 1: Area of Habitable Rooms

Carpet Area	Dimension in meters	Area in Sq.mt	As per Building Bye-laws in Sq.mts	IS888 Code for LIG Housing (Sq.mts)
Living	3.8x2.7	9.83	8.05	9.0
Room	2.85x2.30	6.55	8.05	6.50
Kitchen	1.50x3.05	4.57	5.05	3.30
Water closet	1.2x0.90	1.085	1.15	0.90
Bath	1.2x1.0	1.20	1.25	1.20
Total		25.05		

Source: Computed from Building bye-laws of Bangalore Development Authority and National Building Code



PLOT AREA :21150.30 SQM (5.22 ACRES)

LAND USES	AREA	PERCENTAGE
RESIDENTIAL	9208.22 SQM	43.5%
OPEN SPACES	634.50 SQM	3%
CIVIC AMENITIES	1903.52 SQM	9%
ROADS	9404.06 SQM	44.5%

FAR:9208.22 X4 / 21150.30 = 1.74

HOUSING DETAILS		
NUMBER OF BLOCKS	UNIT PER BLOCK	TOTAL DWELLING UNITS
34	32	1088
GROUND FLOOR UNITS	08	272
FIRST FLOOR UNITS	08	272
SECOND FLOOR UNITS	08	272
THIRD FLOOR UNITS	08	272
PLINTH AREA PER UNIT		29.13 SMT
CARPET AREA PER UNIT		25.03 SMT

Dwelling unit density: 516/hectare

REVISED LAYOUT PLAN :
P PANTHARPALYA

Fig. 3: Neighbourhood Plan of Pantharpalya Slum



Fig.4: Typical Block Plan of Building



Fig 5: Implementation Stages

V. PROJECT IMPLEMENTATION

Reinforced Cement Concrete framed structure with non-solid cement blocks for non-load bearing walls, polymer coated RCC door frames of Nirmithi Kendra's specifications, mild steel door for rooms and PVC doors for toilets/ bath, steel glazed windows/ ventilators were adopted. White washing for internal painting, water proof cement base for external painting and cement concrete flooring specification was followed. Project implementation was taken up in different stages due to non availability of land for transit sheds. The temporary relocation took more time which has affected on time schedule of the project. The water table was available at shallow dept, which necessitated continuous pumping of water while carrying out foundation work. The land is situated in downstream of tank and low lying area and contains clayey soil, sand and boulder filling with combined footing was done. As the extent of land being large that is more than 5 acres and being the in-situ project, trail bores were ascertained for enhancing Safe Bearing Capacity of the soil. Third party inspection and monitoring agency was appointed by the Centre, which used to submit quarterly physical and financial progress and compliance reports regularly. The local community was involved in implementation process.

VI.PROJECT IMPACT

The impact assessment was carried-out by employing structured questionnaires, interviews, visual analysis. Interactions were held with the beneficiaries and the personnel who implemented the project. Ten percent *sample survey* was administered for 100 dwelling units with a random sampling technique. The physical, social, economic and environmental impact assessments were carried-out.

A. Physical Impact

The functional space utility of dwelling units and its satisfaction levels have been assessed. The average level of housing satisfaction is 59 per cent.

Table 2: Physical Impact

Functional Space	Satisfaction levels (Per cent)
Satisfaction of carpet area (25.03 sq.mt)	90% of the residents were satisfied with the carpet area. 10% expressed desertification
Satisfaction of quality of dwelling	19% satisfied with quality of dwelling units 81% not satisfied with quality of dwelling unit
Satisfaction in floor level	56% of the households expressed satisfaction in residing at different floor levels. 44% expressed dissatisfaction on top floors
Ownership/ rentals	63% of the dwelling units occupied by allottees 37% of the houses are rented or leased
Mobility	66% of allottees very much desirous stay in the same area. 34% expressed to move out from this place
Difficulty of upper floors	59% found no difficulty 41% had expressed difficulty in upper floors.

Source: Primary Survey conducted in 2013 by the Authors

1) Housing Tenure

One thousand eighty eight (1088) beneficiaries are identified with a bio-metric identification, but only 896 dwelling units are occupied by them. However, no title deeds or procession certificates are issued to the beneficiaries. While issuing legal status, 4006 urban poor will be given legal housing status.

2) Basic Infrastructure

a) Water supply

There are two tube wells, 68 sumps in 34 blocks of 6000 litre capacity each, 02, 7.5 HP pumps. Also, water is drawn from public taps as well; there is no accountability for the quantity of water consumed by the each of the dwelling units. Residents also have drawn one municipal line to tap water, where water is supplied once in two days for a period

of two hours. The residents purchase water from private sellers for Rs.2-5 per pot.

b) Environment and Sanitation

All households have access to individual bath and toilet facilities. Poor maintenance, broken pipes and chambers cause frequent blockage and back flow in soil pipes. Sunken slabs were not built in toilet spaces and waste water floods

into living areas, which led to poor sanitation. Garbage cleared by BBMP twice in a week. Wastes are being dumped in open drains, set-back area and storm water drains as well. There is no provision of community dustbins in the locality. The slopes are inadequate to drain off storm water. Waste water stagnation and garbage disposal in open drains has been common phenomena.



Fig.6 Solid waste is being dumped



Fig.7 Space used for cooking



Fig.8 Water scarcity in the locality



Fig.9 Sanitation problem

B. Economic impact

Detailed Project Report has been prepared to impart training for 500 slum dwellers from Govt Tool Room and Training Centre and 500 slum dwellers at KEONICS. However, none of the training programmes were initiated. Many of the residents started informal activities within premises in ground floor. About 31% people have access to banks. Thirty Four per cent of the allottees have also earnings from rents and lease of dwelling units. The occupation pattern of slum-dwellers are indicated in table.3.



Fig.10 Informal Economic Activities within the premises

Table 3: Occupation Pattern.

coolie	63	51%
carpenter	1	1%
sweeper	3	2%
auto driver	17	14%
garment	16	13%
vendor	10	8%
housemaid	2	2%
others	11	9%
total	123	

Source: Primary Survey, 2013

C: Social Impact

a) Access to Universal services of Health and Education

100% of the households have access to health and education facilities and Bruhat Bangalore Mahanagar Palike's (BBMP) health centre is located adjacent to the existing slum. Government primary school and high schools are located within two kilometres from the slum and 18% of total population of this slum are in the age group of 6-14 children and all these children are attending school. There have been no incidence of maternal deaths or infant deaths as all cases are institutional deliveries.

b) Social security/ safety in dwelling units and community, crime and community participation

About three percent of the population are in the range of sixty years and above, but only one person has been receiving old age pension and no other security schemes were being availed by the local residents. 100% of the

households felt that the locality is safe in the dwelling units and within the community. There has been no incidence of crime among the community. About 73 percent were satisfied with community living, but 27 percent were dissatisfied and they attributed to linguistic/ cultural differences. The majority of them are Tamil people and few of them are from Gulbarga origin.

VII. SWOT ANALYSIS

STRENGTHS	
[1]	In-situ Rehabilitation project enabled them to provide pucca dwelling units to improve the quality of life and safe living in a neighbourhood approach.
[2]	Adequate infrastructure like bore-wells, sumps and overhead tank for water supply.
[3]	Community hall (418 sqm), which provided in the layout is useful for community participation and Information Education and Communication (IEC) activities.
OPPORTUNITIES	
[1]	Strengthening of welfare association and community based organization, which enable them to access to income generating activities and access to formal loan facilities
[2]	There is a scope for involving Welfare Association in maintaining the common areas, assets and structures.
[3]	Collection of user charges for water supply and electricity to be introduced
[4]	Optimum utilization of the community hall.
WEAKNESS	
[1]	Partial implementation of zoning and building regulations.
[2]	High dwelling unit density (516) above the average 344 dwelling units/ hectare approved in the first phase DPR. These energy intensive structures will add to stress on existing infrastructure like power and water supply.
[3]	Solid waste disposal in the side drains and open areas within the locality.
THREATS	
[1]	Sustainability
[2]	Attrition at upper level dwelling units

VIII. CONCLUSION

The slum re-habitation project was initiated in the Pantharpalya Slum under JnNURM project. The in-situ rehabilitation, which was carried out in Pantharpalya Slum has contributed for improving the quality of housing. The project has benefitted largely to the urban poor though, certain dissatisfactions in terms of quality of construction, sustenance of infrastructure and its maintenance including community involvement. The outcome of the impact study is that the project has yielded good result in benefitting the urban poor to improve their quality of life. The impact results have scope improve in rehabilitation projects.

REFERENCES

[1]. Shankar B., “Inclusive Urban Planning: Challenges and Strategies of Karnataka State”, Poster Paper, IDES_CPS, Civil Engineering Series-Advances in Civil Engineering ACE, Ed., pp-11-15, 2011, New York.

[2]. Shankar B and Chidambara Swamy, ” Urban Poverty Alleviation: Experiences of Community Development Initiatives in Karnataka”, International Journal of Recent

Trends in Engineering, Vol.1, No.6 , Academy Publishers, Finland May 2009.

[3]. Bangalore Master Plan-2015: Volume-I –Vision Document, Bangalore Development Authority, Bangalore.

[4]. Laura Jaitman and Jose Brakarz, Evaluation of Slum Upgrading Programs: Literature Review and Methodological Approaches, Inter-American Development Bank, Nov-2013.

[5]. Restrapo, Paula, Moving in Selling Out: Outcomes of Slum Rehabilitation in Mumbai, International Conference on Applied Economics, ICOAE 2010.

[6]. R. C. Sudheesh, Sheltering Bangalore’s Slum Dwellers: Issues and Intervention:: <http://www.docin.com/p-554952306.html>.

[7]. Michael Bamberger and Nobuko Fujita, “A Practical Handbook for Designing Methodologically Sound Impact Evaluations Under Budget, Time and Data Constraints” 2nd Edn. Foundation for Advanced Studies on International Development.

[8]. Grant Thorton, Appraisal of JnNURM: Final Report, Vol. I, March-2011, India.

[9]. Impact Evaluation for Slum Upgrading Interventions , Doing Impact Evaluation World Bank Report-2006

[10]. Report of the Pronab Sen Committee on Slum Statistics (2010): Ministry of Housing and Urban Poverty Alleviation. Http://mhupa.gov.in/w_new/ slum_report.pdf

[11]. Provision of Basic Services to Urban Poor -ULB Level Reform: JnNURM primers.

[12]. Government of India Modified Guidelines for Sub-Mission on Basic Services to the Urban Poor, 2009.

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