

Exploring the ‘process’ and the ‘product’ to resolve home-based work issues in slum settlements

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Abstract: Housing is a vital productive resource for the urban poor. Though the urban poor reside in uninhabitable and unliveable places, they play an important role in contributing to the nation’s economy. Most planning and architectural developments focus on the impacts of slum settlements on city beautification, but less attention has been focused on the slum dwellers’ potential or the improvement of these settlements.

This paper reports on the built environment intervention initiated by the Innovation Centre for Poor (ICP) Project, a non-government organisation (NGO), in the slum settlements of Ahmedabad, India, as part of an ongoing study examining the effectiveness of on-site physical upgrade of areas inhabited by the urban poor. The ICP project aimed to improve the home-based working conditions of the urban poor. The paper reports on the methods adopted in the project and the role of the stakeholders and urban poor at each stage of the process. The paper draws from evidence collected through site visits, observations, documentation and records in the form of photos, household surveys and structured interviews with the stakeholders. The key aspect of this paper is to examine approaches and solutions that can provide urban poor with a sense of ownership and comfort in their built environment.

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The ability of the slum dwellers to undertake the proposed solutions becomes yet another critical aspect for consideration. The inferences drawn from the study would be noteworthy for future redevelopment projects globally.

Keywords: Slum settlements, Ahmedabad, home-based work

Understanding the complex relationship between housing and socio-economic factors in the Indian slum settlements:

Never before in history has the world witnessed such a rapid growth in urbanisation. The global urban population has grown by 50.5 per cent in 2010 (which is roughly half of the world's population) and is estimated to increase further by 59 per cent by 2030 as projected by the UN-Habitat (2012). This rapid urbanisation has also seen an absolute increase in the slum population from 776.7 million in 2000 to some 827.6 million in 2010 (UN-Habitat, 2012). In India alone, the urban population is 377 million and estimated slum population is 97 million. It is predicted that by 2026, 40 per cent of population in India will live in the urban areas (PRIA, 2014).

Megacities in India are rapidly transforming into centres of increasing population density, booming infrastructure, investments, economic opportunities, networks, knowledge and technology. Convergence of population, capital and knowledge in one place has given rise to a multifaceted structure that consists of subdivided spaces of both, the rich and the poor. Tangible differences in the built environment of the rich and the poor have resulted in creation of an urban divide of

unequal opportunities, socio-cultural exclusion and economic turmoil for the poor (Nijman, 2010). This urban divide is relentlessly widening, and is also clearly evident in Ahmedabad.

The current economic growth in urban areas continues to attract migrants from surrounding rural areas to cities with the hope of new livelihood opportunities (Sassen, 2001). The constant flooding of the urban poor into un-planned and under-serviced parts of the cities results in greater burden on those infrastructures which are the least adept at dealing with the growing demands. Unfortunately, the city is still not equipped to accommodate the influx; lack of basic services, employment and housing persists, encircling the downtrodden and the cycle of deprivation continues for the urban poor (Tewari et al., 2007; Trivedi, 2012).

Though the slum settlements are ‘uninhabitable’ and ‘unliveable’ places, they provide a large urban labour force (Naik, 2012). It is estimated by the UN-Habitat (2010-11) and Cities Alliance (2012) that about 85 per cent of new employment opportunities around the world occur in these slum settlements creating informal economy. A closer look into these settlements reveals buzzing vibrancy, dynamics, and economic activities. Data confirms that 70 per cent of the urban poor are said to be working in the informal sectors inside these closely-packed communities (Selja, 2004; Hendricks 2011), and entrepreneurship is everywhere. The population living and working in these informal sectors are responsible for generating 65 per cent of the gross domestic product (GDP) to the national market (Economic

Survey, 2013), and India's service sector is one of the fastest growing sectors in the world, comprised mainly of individuals from the informal sector – for example, rickshaw puller, domestic workers, construction workers, home-based workers, vendors, hawkers, to name a few (PRIA, 2014).

Slum settlements in India are a mosaic of people from different socio-cultural and ethnic mixes, residing in clusters within the settlements based on their skills and expertise. For the slum dwellers, moving out of these clusters could mean embracing insecurity and apprehension (Meikle, 2002). For urban poor, housing is an asset to feel stable and secure (Masika, 2002); it is a source of sense of belonging, ownership, community, relations and status (Trivedi, 2012).

Housing is also an important productive resource for the urban poor. Operating home-based economic earnings are the primary source to access savings for the livelihood. Manufacturing, packaging, retailing, wholesaling, along with cultural and ethnic activities, are all performed in one place. Apart from this, productive assets include livestock, machinery, tools, and household goods. It is also essential for running the home-based economic activities, considered to be the most important activity after labour, for productive purposes (Beall & Kanji, 1999; Verrest, 2007). Economic activities combined with socio-cultural activities are the keys of their survival (Trivedi, Personal experience during India Slum Action Project, 2010; Trivedi, Field study, 2012, 2014).

Nonetheless, the central feature of urban poverty is the lack of access to secure and safe housing. With the constant growth in urbanisation, municipal land has also become unattainable to the urban poor, with all national level policies being based on market land solutions, leaving the urban poor with bleak hope and fewer alternatives for their future (India: Urban Poverty Report, 2007). As a result, a large number of slum dwellers depend upon precarious employment in the informal sector, accommodated in their two-room deteriorating houses or temporarily constructed houses which are built on a land with no title or tenure. Faced with a constant threat of eviction, slum dwellers are wary of investing money towards making these dwellings permanent or liveable. Thus marginalized from the formal city in terms of work and home, the urban poor set up their home-based work in their organic settlements, with all houses closely packed together (Horen, 2007). Their lives are characterized by low pay, poor working conditions, and an unhealthy environment creating serious implications for their health (Butala et al., 2010). Unfortunately, statistics often mask the severity of conditions in the slums (Global Poverty Report, 2007). The executives, architects, planners, designers and policy makers have until now ignored these gradually formed crude settlements, which are now spilling into the formal and elite areas of the city and are often seen as a nuisance (Tewari et al., 2007).

Hampered by the lack of infrastructure, housing and public services, the potential of the urban poor in contributing to the national economy and stimulating the development of India is simply not recognised. Nevertheless, with the current surplus in the slum population, the urban

poor should be seen as an asset and human capital rather than a liability. As Indian entrepreneur, politician and bureaucrat, Nandan Nilekani (2013) argues,

“Investment in human capital is investment in the national economy.”

Long running practices, prejudices, notions of the urban poor and deep-rooted traditional ways of the governance, must be replaced with new practices and approaches towards reforming the situation of the slum settlements (Buckley and Kalarickal, 2005). By reflecting upon our notions of the slums, innovative and effective approaches have to be supplemented to this income growth strategy of the urban poor, which ultimately makes a sustainable impact on the urban poverty (McCarthy, 2007; Trivedi & Tiwari, 2013).

This paper highlights the efforts of the ICP in overcoming one of many issues of home-based work in the slum settlements of Ahmedabad, India, and also demonstrates how a collaborative effort can fulfil the gaps as the government bodies fail to perform their responsibilities. The paper is further divided into three sections. The first section introduces the city of Ahmedabad and discusses the context of the home-based industries in the slum settlements of Ahmedabad. The second section describes the methodology adopted in working out architectural solutions. Lastly, based on the household surveys and stakeholder interviews, the third section presents the analysis of the process and the product for future advancements.

Study context:

Ahmedabad is the financial capital of the state Gujarat in India and is apparently unaffected with the global economic downfall (Chatterjee, 2011). This is evident from the rapid construction of mega malls, flyovers and highways, and river beautification projects along with gated communities emerging to replace many large industries, leaving a large number of the workforce jobless forcing the unemployed into informal sector activities. Thereupon the urban poor working in unpleasant conditions in the slum settlements based within their homes and their present circumstances of exclusionary growth, there is an urgent need for a comprehensive development strategy (Horen, 2007). Development within such a strategy requires a collaborative effort with the urban poor as partners in the process.

One such project is the ICP project initiated in the year 2009 and since then has been implemented in different phases with different contributors, until recently in 2012, when the product, *Ujasiyu* (skylight in local language), was finalised and installed. The ICP project is a collaborative partnership between the NGOs - Mahila Housing SEWA Trust, SEWA (Self-Employed Women's Association) Bank, and SELCO (Solar Electric Light Company), Foot Prints E.A.R.T.H (architectural consultancy in India), academic researchers, architecture students, residents of the slum settlement and skilled labour. Each partner in the project participated and contributed their ideas and expertise, with a common goal of benefitting the urban poor. Incorporation of local people, local resources, local tools, labour and

techniques in the process was to achieve an outcome that is innovative and stimulates reciprocity amid all the partners. The purpose of this paper is to understand, document and analyse the process of development and scrutinize the product, such as both the process and the product can become integral to the learning and practice for the organisations, communities and individuals and are transferable from local to global.

Innovation Centre for Poor (ICP) Project: Process and the product

The ICP project aimed to understand and improve the working conditions of the home-based industries. It involved the participation of students, volunteers, and interns from national and international universities and organisations, for conducting needs assessment surveys, observations, and documentation of the settlements by engaging dwellers in informal discussions. Documentation of urban poor settlements was stretched all over the city of Ahmedabad, limited to slum settlements having home-based industries. Throughout the survey, it was observed that shortage of houses and deficiencies in the provision of basic urban infrastructure and services was significant and resulted in the growth of the informal sector. Nevertheless, based on the analytical data collected throughout the survey, the problems faced by the men and women involved in the home-based work were mostly those of infrastructure, light and ventilation, shortage of space, and the health hazards caused by it (as seen in the images in Set A and Set B).



(1)



(2)



(3)

Set A: Slum dwellers' involved in the home-based work in inadequate light and ventilation (Source: Trivedi, 2014) (Image 1 – Girls making incense sticks, image 2 – women making *bidi* (a thin, Indian cigarette, filled with tobacco flakes wrapped in a leaf and tied with a string), image 3 – woman doing tailoring work)



(4)



(5)



(6)

Set B: Poor infrastructure of the slum settlements (Source: Trivedi, 2010) (Image 4 – Closely packed houses with poor roof conditions, image 5 – size of the door is too small for light and ventilation to pass, image 6 – interior of the house showing inadequate light and a small opening in the roof for ventilation)

Overcoming these issues and securing services for the poor was a complicated task, and local factors had to be taken into account for the success of the project (Trivedi & Tiwari, 2013). The services planned had to be designed and installed within the existing built-up footprint, with new negotiation patterns with the residents of the community, considering the financial condition of the residents, their socio-cultural

background, and a long term perspective. Self-enumerations, community mapping, community mobilization, sweat equity, marketing and community decision-making were some of the key features of the project.

With the help of architect Yatin Pandya and students with a design background, permutations and combinations of the designs were performed on the site to test the strength of the roof, direction of the light and air to avoid it getting blocked from the neighbouring houses, and size of the opening to prevent cats entering the house. Each house having a different requirement, it was difficult to provide case specific solutions. However, seven design modules (see Set C) were shortlisted and were installed in the houses for a period of one year to test their strengths and weaknesses given the extreme weather conditions of Ahmedabad. Out of these seven modules, one roof module was finalised based on the dwellers assessment.



(7)



(8)



(9)



(10)



(11)



(12)



(13)

Set C: Shortlisted seven design solutions (Source: Trivedi, 2014) (Image 7 – Roof panel attached to a hinge and rope solution; image 8 – Dome roof solution; image 9 – Upside down bottle ‘bulb effect’ solution; image 10 – Sliding roof solution; image 11 – Conical roof solution; image 12 – Opaque sheet fixed on the roof for light solution; image 13 –Alternate ‘liftable’ roof panel arrangement)

Ujasiyu, the finalised product, is a combination of the seven shortlisted architectural solutions incorporated in one all-inclusive prototype (see Set D). *Ujasiyu* is a pre-fabricated product made out of FRP (Fibre Reinforced Plastic) corrugated sheets for easy installation and is fastened on the existing corrugated sheets typically used as roofing in the slum settlements. These FRP sheets have leaf patterns embedded in it, to avoid direct and extreme white light during summers. It is a conical shaped product with a curvature with wire mesh fixed on the larger opening side for easy ventilation. The installation on the roof

provides enough light during day time and creates ventilation through air flow. The installation has helped to reduce electricity bills up to 25 per cent. The installation has also helped households with home-based industries. For instance, women are now able to work sitting inside their homes while monitoring toddlers and children's schoolwork unlike prior to the installation of prototype when they were unable to work during rainy season. However, since the installation of redesigned roof prototype, they are able to work regardless of rainfall, which adds to extra savings. Moreover, due to direct entry of natural light into their homes, the output/production is more than before the installation of *Ujasiyu*. Another significant benefit was in the improvement of indoor air quality. For instance, women making incense-sticks suffered from respiratory problems as there was no ventilation for the powder in the air to escape; after the installation, the powder escapes through the wire mesh in the roof improving indoor air quality and preventing health issues.



Set D: *Ujasiyu* – The finalised product installed on the roof (Source: Trivedi, 2014) (Image 14, 15 and 16 – Pre-fabricated FRP product installed on the roofs of the houses; image 16 - embedded leaf patterns visible on the FRP sheets)

The marketing of *Ujasiyu* was brought into effect by training and sending a team of Micro Energy Auditors from the NGOs SEWA and SELCO to spread awareness among the slum dwellers. The team of auditors conducted door to door energy audits and educated local households on the importance of energy conservation. The team also informed the households about the new specifically designed module for better light and ventilation in the house and reduction in the electricity bills. In a year, almost 60 modules were sold with the help of auditors and another 60 had exposure to the modules at a relative or neighbour's house. Earlier the modules were sold for INR 2, 650 (USD\$ 44), which included INR 1, 000 (USD\$ 17) subsidy from the SEWA bank. Total investment of a household was INR 1, 650 (approximate, USD\$ 27) only, which could be easily recovered in few months through savings made in the electricity bills. However, there was a substantial downfall in the purchase of the installation after the end of the subsidy period and incremental rise in the price from INR 2, 650 (USD\$ 44) to INR 4, 500 (USD\$ 74). The project is on-going and is currently looking for more purchasers' of the product. This raises the question, whether the NGOs will invite private investors so as to reduce the price of the product or will put an end to the project, which has been running from past 5 years and is a combined effort of various organizations and professionals.

The whole process of having a dialogue with the dwellers and reflecting over it was to design simple, innovative, case-specific, rational, economical, and functional solutions. ICP project has been successful towards attempting and understanding the lifestyle, needs

and working conditions of the slum settlements. However, NGOs and professionals involved in the project have lacked foresight. The solution and installation is simple enough for the dwellers to understand and perform it themselves. Nonetheless, a product based solution has spearheaded the NGOs efforts rather than bringing the urban poor one step forward to help themselves to improve their living conditions. The next section of the paper presents a critical analysis of ICP for its process and examines the product for its effectiveness. The data below is based on the survey conducted by the author.

Findings and discussions of the project:

The empirical study was conducted in two stages in 2010 and 2014, which is at the beginning of ICP and during completion. The intention was to keep a track on the progress of the project, reflect on the outcome and analyse the project for its strength and weaknesses. Observations, documentation in the form of photographs, collection of secondary data, informal discussions with the residents, household surveys and interviews were conducted with the practitioners' involved in the project. A focus group discussion was conducted for the triangulation and validity of the data. 40 residents involved in the survey were specifically from the households with *Ujasiyu* installed in their premises. Likewise, 16 practitioners' with different expertise involved in ICP Project were interviewed. This empirical research was conducted to examine collaborative strategies adopted by the practitioners' for the slum settlement intervention and to scrutinize its impacts on the home-based industries. The survey was sought to

investigate the process of intervention by questioning the residents and the practitioners' for their views, contributions, and aspirations towards the project. The survey and interview questions mainly focused on the key aspects of ICP and whether the project in their opinion has been successful.

Analysing the key aspects of ICP project:

1. **Response to the local context:** ICP project's approach towards development was particularly designed as a response to existing housing and economic conditions and the needs of the slum dwellers. The objective of ICP was to ensure sustainable development through mobilizing local resources. It has been able to create workable architectural solutions with the help of the community by modifying technology to suit the project delivery ideals. Even though the project has emerged locally, the setback of the project is that neither the local skilled craftsmen, unemployed men, nor the housewives, were utilized for their labour and skills. The product developed in the project, which could have incorporated recycled materials and simple hand operated tools produced and used by the slum dwellers in the home-based industries instead of FRP sheets and technologically advanced machinery for installation would have reduced the price of the product to a greater extent.

2. **Community involvement:** ICP project is an example of the tailor-made relationship between the NGO and the slum community. The process of participating in the dialogue and conducting need assessment with the slum dwellers to understand the lifestyle, living conditions and

needs in itself shows effectiveness of the professionals involved in the project. But, the process should have been to involve, train or use the skills of the dwellers in the installation, instead of subsidizing the module. The subsidy has reduced the capacity of the urban poor to think, act and resolve their own issues.

3. Response to collaborative approach: The ICP project has been collaboration between various local bodies, professionals and international organizations. All the efforts to make this project successful were channelled through the NGOs and the input of the local government was negligible. Involvement of local government bodies in such projects is essential to reorient planning and finances to facilitate resident involvement in meeting their own needs. It has been observed that due to the threat of eviction, the slum dwellers are often wary of investing money in making their dwellings permanent or liveable.

4. Sustenance of the project: Through this project the NGOs have demonstrated a new form of collaborative dialogue and action that has filled the gaps in many ways, which formal institutions have failed to achieve despite this being their statutory responsibility. In this instance, professionals have been involved in designing solutions that are radical and can meet recognized goals. However, the increment in the cost of the product and consequent decline in the purchase gives an impression that the focus of the NGOs was to give a product based solution rather than actually resolving the home-based industry issues.

Conclusion:

Government authorities, NGOs, public agencies, and international organizations need to recognize that urban poor redevelopment is not limited to built environment up-gradation but is a myriad of socio-cultural, psychological, economical, and emotional domains that needs to be addressed holistically. Improving the living conditions of the urban poor is only a part of the solution. Preference should be given to the development of the urban poor that are based on mutual co-operation, that require development in the sense of generating local leadership, project management capacity and sense of responsibility. These measures may take longer to deliver envisaged project outcomes in terms of built environment improvements, but will ensure the sustainability of the outcomes. Here it is important to remind ourselves that built environment redevelopment projects are best considered vehicle to bring about community wide benefits, globally.

Data collection and field work was done for 'India Slum Action Project' in Ahmedabad, India as a Research Assistant to Dr. Reena Tiwari in the year 2010. The project was funded by Australia India Council. The site was visited again in April, 2014, to see the current status of work and to collect recent data for an ongoing Doctoral research project.

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