

The Urban Informal Sector and Housing

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Abstract- With urban population in India growing rapidly, a non-elitist section is created in each growing city. This Section of Society is referred to as the Urban Poor, characterized by an economy which is "below subsistence level", poor Quality of Life, over burdened and/or nonexistent facilities, amenities and basic services. Their "informal" status excludes them from the benefits accrued by mainstream "legal" citizens. They occupy slums within a city, live in shanties and squatter settlements, and work on a daily-wage-basis. Their numbers follow a multiplier growth pattern. They encroach upon prime urban land, live in non habitable dwellings. A conventional pucca (permanent) house is far beyond their means. With all good intentions, the Government is unable to provide them affordable houses. They ask for daily bread, but are offered a piece of cake. There is no control on sky rocketing land prices, as well as those of the conventional building materials like cement concrete steel or bricks, and thereby the unit cost of construction. In this scenario, the Government policies recommend, disproportionately smaller and substandard conventional pucca (permanent) houses, while research in laboratories on alternative materials with much better performance, continues with satisfactory outcomes. One of these materials, which has been proven to be safe, structurally stable and durable, is Bamboo. A case has thus been prepared, for questioning some of the Government policies, definitions and procedures, in an attempt to accommodate this material for housing the urban poor, in order to combat the rising un-affordability of modest dwelling units.

Index Terms- Affordable Housing; Bamboo Reinforced Concrete; Bamboo Walls; Low Cost House Design; Urban Poor; Policies.

I. INTRODUCTION

A. *The Urban Poor -Who are they?*

The Urban Poor are generations of migrants settled in, but not a legitimate citizen of a growing and living city. They possess no ownership documents either for land or property, do not have a bank account, indulge in informal money lending and borrowing. They do not have an Identity proof, or a proof of address. They are often non tax payers, engaged in informal small jobs, surviving on very low incomes. As such, they have no access to institutionalized loans, insurance or subsidies. Their houses are unfit for human habitation, yet they live in them for decades, without much improvement. Any effort through the various Government Schemes, to allow them room for upward movement both socially and economically, fall flat, due to

loopholes in the policies, or mismatch of priorities as assessed or understood by the planners, against those of the target group.

Those who become prosperous, (which is very rare), relocate and find an abode elsewhere.

At other times forceful evacuation and involuntary relocation to a site away from the current one, despite provision of permanent houses, often results in selling off, of these houses to the next higher income group section of society, and returning to the earlier location, and continuing to live in a shanty.

B. *Evolution of Strategies for Dealing with Slums in India*

The phenomenon in the late '70s and early '80s put a big question mark to the Government approach to "Clear Slums". Slums were seen as "cancerous growth" in healthy cities, and were treated like an unwanted extra appendage which had best be amputated. The concept was later modified to mean slum-improvement in the late '80s, to slum up-gradation in the '90s, to integrated slum development. The term "development" was an all inclusive package. Comprehensive as it may appear to be, it proved to be ineffective, owing to the lop-sided development which resulted through this approach.

Issues of affordability, purchasing power, willingness to pay for basic services, user and betterment charges, skewed priorities, poor representation by the weak, over-powering presence of those who were slightly better off and could walk the corridors of influence, were now major concerns. It compelled planners to consider using a participatory approach for decision making and problem solving.

C. *The Participatory Approach*

"Put the Last Man First" was the new mantra (dictum) for Development. The new approach was democratic and transparent. Planners, grassroots level workers, implementers were now required to develop a new skill, that of learning the PRA TOOLS (Participatory Rapid Appraisals), in order to understand the priorities of the poor. A collective decision making process was introduced for the first time. More and more tools were now available for "inclusive policy making". Integrated participatory development brought about positive infrastructural (physical), as well as access to basic amenities, due to a large number of employment generation activities, supported by National Employment Guarantee programs.

II. NEW EMERGING CHALLENGES FOR PLANNERS

D. A competition for Funds

Meanwhile experiments, innovations were happening quite without the involvement of the target group. New terms and concepts invaded the construction Industry. Planners, Architects, Engineers and other professionals were now discussing "Sustainability", "Green Architecture" and "Energy Efficient solutions in Architecture. Leeds rated Iconic Green Buildings, took architectural practice to a totally different level. While large architectural firms were engaged in sustainability as a core concern in their architecture, the man on the street was slowly yet systematically getting marginalized from mainstream development. Energy and Environmental issues topped the list of concerns. "Larger than life" hybrid structures created a new typology of buildings, which violated all norms of symbiotic co-existence. They required "corrective design measures" to make them energy efficient. The design and re-design did very little to minimize the demand on public funds. The carbon footprint, had to be reduced, simultaneously public funds were required to be spent carefully and judiciously.

E. The Empowerment of Urban Local Bodies

Through the 73rd and 74th constitutional amendment in 1992, the local authorities were vested with discretionary powers, along with the mandatory powers, which increased their authority, responsibility, and accountability.

Maintaining a world class image was more important than ever before. With multiple claimants on forever limited public funds, lobbying among various stakeholders relegated the slum dweller back to where he came from.

Urban local bodies were faced with greater challenges. Paucity of funds, an expanded scope of work, with decentralization caused the planning bodies and the maintenance bodies, to start working in tandem. Other related local and state bodies involving services and amenities, were all expected to work in a coordinated manner. The format for such administration and Governance resulted in overlaps in their jurisdictions and multiplicity of functions and action. Wastage, duplication of work, and piecemeal work tendencies often lead to fire-fighting, and crisis management.

III. SIZE- QUALITY- AFFORDABILITY DYNAMICS

F. Small Is Beautiful- Very Small Is Absurd

While bureaucrats, politicians and technocrats were busy implementing large scale world class physical infrastructural projects in the city, more for the hefty kickbacks than people's welfare, more for visibility, advertisement and presence, even more for political mileage, target being the future vote bank, housing for the poor was pushed to the rear seat. Initiatives in research and development suffered in large number of cases due to lack of political will to take them seriously for making a difference for the urban homeless.

Conventional construction materials experienced a steep price escalation, and thus became unaffordable to the level of being totally out of reach for many, and an unreasonably absurd

reduction in the size, rendered houses useless for decent and dignified households. Size of a house is more a function of the number of occupants, than the combined gross household income. Higher densities of population violating the standard assigned for the "Number of persons per room ratio", can only replace one category of slum with another one.

There is a lower limit (a virtual floor) to the size of a dwelling unit, below which it cannot be called habitable for a household size of 5 members. There is also an upper limit (a virtual ceiling) to its cost, beyond which it becomes unaffordable for many. It is of importance to illustrate how a given "functional" size, and "affordability" are both non-negotiable parameters.

G. Cost Cutting is not equal to Size, Safety and Quality Compromises

There cannot be a compromise in any of the three variables when addressing the issue of housing for the Urban Poor! The issue can only be resolved through the use of appropriate technology, local materials, to make it affordable for the poorest of the poor - in this case, the Urban Poor and the Homeless. Having established this, the stage is now set in place, to transfer innovative low cost technology and alternative materials from lab to land. However it is essential to define "poor, very poor" and other terms that often get misinterpreted by those in charge of translating missions, goals, objectives and policies into a reality.

There is a clear dilution of the content and intent of policies by the time they get implemented. At times ground realities are much harsher than what planners can comprehend. Affordable Housing gets defined purely in terms of what is "Possible to be supplied" in a given income range, and what a household in particular can pay for. This creates a gap between what is affordable, what is possible, and what is desirable as part of housing standards. This non convergence is noticed the most in the housing for the urban poor. Since their affordability levels are very low, the market provides them with housing which is characterized by insecure tenure, small size, unhygienic environment and non-existent infrastructure. Non-availability of Affordable housing is as much a problem of the middle income groups as it is of the lower income groups. In their inability to find appropriate abode many a higher income groups (belonging to middle and lower middle income groups) are constrained to opt for sub-standard housing. Many invade cheaper/subsidized housing provided by the state for the poor thus negating government efforts. The issue of Affordable Housing thus has to be looked at in an integrated manner.

IV. URBAN HOUSING AND HABITAT POLICY 2007 [4]

Research challenges have increased after more than 50% of the Urban Population is in the danger of living out of a house that takes up 30% to 40% of their combined household income, as rent or EMI (Equitable Monthly Installment) as the case may be, by virtue of the family being a tenant or owner of the house. A

house when unaffordable at higher levels of income could still

Income Group	Monthly Rs.	Cost As a Multiple of Household Gross Annual Income (x)	EMI/Rent As a Percentage of Gross Monthly Income
BPL	<=2690	< 2x	5%
EWS	2639 - 3300	< 3x	20%
LIG	3301 - 7300	< 4x	< 30%
MIG	7301 - 14500	< 5x	< 40%

function efficiently, and what it may have foregone could be just frills. However at lower levels of incomes, what has to be foregone is far too valuable- structural stability, size, safety, security, privacy, among many other things. Un-affordability is a universal phenomenon across all sections and among all generations of urbanites.

H. Technically Speaking

Affordability has been viewed as a ratio of price/rent of housing to income of household. The ratio differs for different income groups. Lower income groups can afford to pay much less a proportion of their income for housing than that of higher income groups. [3]

The Ministry of Housing & Urban Poverty Alleviation created a High Level Task Force in January, 2008 to examine the issues related to “Affordable Housing for All” led by The Chairman – Housing Development & Finance Corporation Limited (HDFC)

While keeping the affordability ratio for LIG and MIG as given by the high level Task force Committee, (Table 1) the ratio for EWS needs to be lowered to not more than 20 per cent for EMI/rent and 3 times household’s gross annual income for cost of house as recommended by National Resource Centre, School of Planning and Architecture, New Delhi.

Table1. Affordability levels and Income Categories as per the (DPC) Report

Income Group	Size	Cost	EMI/Rent
	Carpet Area in Sq. Ft	As a Multiple of Household Gross Annual Income (x)	As a Percentage of Gross Monthly Income
EWS/LIG	300-600	< 4x	< 30%
MIG	< 1200	< 5x	< 40%

Another category of urban poor which is also part of

Government’s inclusive policy of providing Affordable Housing for all namely BPL (Below Poverty Line). This category needs to be considered separately and not as part of Economically Weaker Section (EWS). The affordability level of households in this category would not be more than 5 per cent of the income. The income categories and affordability levels thus can be defined as in Table 2.

Table 2: Affordability levels and Income Categories including BPL

Income Group	Income	Affordable EMI/Rent per Month (in Rs)	Affordable cost of the House (in Rs)
	Monthly Rs.	In Absolute Terms	In Absolute Terms
BPL	<=2690	<= 134	<=64500
EWS	2639 - 3300	538 - 660	96876--118800
LIG	3301 - 7300	990 - 2190	158448--350400
MIG	7301 - 14500	2920 - 5800	438000--870000

Taking the income classification of different income groups as defined by the Government of India, the Affordability Levels would be as per Table 3.

Table 3: Income Classifications and Capacity to Afford EMI/Rent per Month

Very few households in each category would be in any position to opt for the high end housing. Affordability levels of most of the poor would be much lower than what is indicated in the figures in Table 3.

“It is also quite evident, that at current prices these cannot fetch a dignified house in most urban areas. It is important to define the lower limits for each income category also in order to plan for provisioning of all for lowest of income group in each category”[3]

“Affordability is to be defined not only in terms of purchase price of the house (in case of ownership housing) or rent but must also include other charges/fees (registration charge, search cost etc.) payable at the time of purchase/renting of the house as also recurring cost over the lifetime of stay in the house. These would include taxes, maintenance cost, utility cost. One may also include cost of commuting to work place or other places by different members of family.” [3]

Source: Affordable Housing for Urban Poor National Resource Centre SPA, New Delhi, Supported by Ministry of Housing & Urban Poverty Alleviation GOI July 2009”.

V. IMPLICATIONS ON THE APPROACH TO BE ADOPTED FOR RESOLVING THE ISSUE OF AFFORDABILITY FOR THE BELOW POVERTY LINE URBAN POPULATION

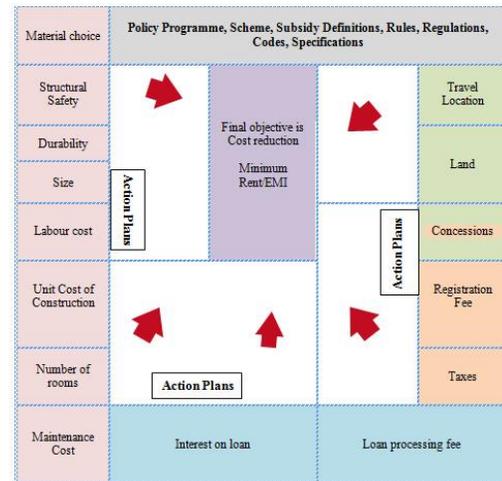
I. Analysis

Urban Housing and Habitat Policy 2007 can be seen as an eye-opener. It did enough to provoke positive criticism to get to the bones of the issue, and made a few strong fine print statements. It established that:

1. A pucca (permanent) house cannot be made affordable, unless the safety, size, and quality are partially sacrificed.
2. Housing and Infrastructure cannot be mutually exclusive
3. Habitat not Housing is what needs to be planned for. Each being valueless without the other
4. While defining affordability of dwelling units, other miscellaneous hidden costs may mean nothing at higher levels of income, but at Below Poverty Levels, these constitute a large proportion of the household income, and can tilt the balance between affordability or otherwise.
5. Costs of all kinds, including notional, running, sunk, opportunity are more relevant in the case of the Urban Poor, than for higher incomes.
6. Sensitivity to loss, like a single non earning day could create far more turbulence in the life of a BPL household, than for higher income groups, hence tax holidays, subsidies, grants and waivers to be integrated with other resilient fiscal planning measures capable of absorbing non-repayment or untimely repayment offering flexibility to borrowers.
7. Similarly, expenditure on extra travelling, for each member of the household due to relocation (if any) could also affect affordability, in which case relocation compensation measures to be in- built in the form of subsidised travel costs using renewable BPL concession passes or travel cards.
8. “Instead of defining kutchra or pucca houses, it may be more scientific to define houses on the basis of the load bearing capacity of the structure and outer skin in terms of their carbon foot print, life cycle and end of life value whether negative, zero or positive, where in a judicious mix of market economics and ecological economics are included.” [1]

VI. ALTERNATIVE MATERIALS - FOR COST CUTTING

Table 4: Simultaneous Cost Reduction at Multiple Levels



Legend

- Central Govt. Policy
- Central Government, State Government, Local body, in – house Architects + Structural Engineers (Designer) + in house team of
- Contractors and sub-contractors
- Banks, Housing Finance Institutions, (HFIs). Local bodies

Note: Colour code represents the agencies as indicated wherever they appear across all Tables in this Document

J. Inferences

1. Having understood poverty, the plight of the urban poor, the possibilities and constraints, it is clear that an approach needs to be adopted, which identifies the constants and the variables, and the limits the floor and ceiling cut offs for Below Poverty Line category.
2. For the highly cost sensitive section of the society, it has to be recognised that the complexities involved in costing of a dwelling unit requires an integrated package approach, where multiple agencies come together and work in coordination, while playing their role with the single agenda of a cost cutting exercise for those who struggle to survive Below the Poverty Line.
3. There is a train of agencies from innovation to the final delivery of a low cost house. No single agency can perform all the tasks involved in the activity. The Research and Development can contribute only the know-how and the nuts and bolts of production.
4. The research outcome has to be woven into the Nation’s benevolent policies, involving other central and state level agencies with neatly framed action plans at the lowest level. It is

important at this stage to exercise caution in ensuring minimal involvement of commercial Contractors Engineers or Architects, so that the product is handed over through the shortest route from lab to land thus eliminating chances of delays and thereby increased costs.

5. Just so that the distribution and delivery machinery is insulated enough to keep the intermediary agencies totally out of all transactions between the provider and the provided for, the Self Help housing concept could be resorted to.

6. It could therefore entail budgeting for special Training Programmes systematically organised for the Urban Poor, especially for those who have not undergone formal Education. This could create a new crop of skilled labour that could also specialise later and use it for income generation

Table 5: Role of Various Agencies in Cost Reduction

Objective : Minimum EMI/ Rent for Below Poverty Line			
Agency Colour Code	Who	What	How
	Central Govt. Policy	5-Year plan provisions, Definitions	Annual budgets, Tax exemptions, special target group specific/ area specific exclusive policies, Cross subsidies, modify definitions
	Central Government, State Government, Local body, Architect+ Structural Engineers + Contractors	Development Control Rules, building Bye Laws, Schemes, Definitions	Design, Supervision, Choice of Material, Specifications Technology special byelaws for Urban Poor
	Banks, HFIs.	Special cheaper Loans, Subsidies	Minimize paperwork procedural matters.
	Local bodies	Through Development control rules, Master Plan Allocation & Land-use plan	Special land reservations, Relocation schemes and regularisation of unauthorised settlements Issue of relevant concession cards for use of public transport,

Note: Colour code represents the agencies as indicated in Table 4 and Table 7

VII ROLE OF VARIOUS AGENCIES IN COST REDUCTION

1. The Final objective being, minimum outgoings from a BPL household's income as Equitable Monthly Income (EMI), or Rent for the dwelling Unit Various agencies have to contribute their efforts, discretionary powers, within the framework of the National objective of providing decent habitable housing for the Urban Poor. Clear cut distribution of duties and action plans defining "who does what and how" leaving no room for ambiguity or misinterpretation. Each programme or scheme has

to be converted into a complete project with a definite time horizon.

2. Taking the income classification of different income groups as defined by the Government of India, the affordability levels of the Below Poverty Line Group is Alarming. It is this group that is caught in a vicious cycle and the expenditure always overshoots the budget. Even if the Net Present Values (NPV) were to be calculated, the internal percentage difference when compared to the next higher income group remains the same.

Table 6: Affordability Status of the Below Poverty Line Urban Population (2008)

BPL	Monthly Income (Rs.)	Annual Income = x (Rs)	Cost of an affordable house 2x (Rs)	5% of annual income Annual EMI/ Rent (Rs)	EMI/ MONTHLY RENT (Rs)
	2700	32,400	64,800	1,620	135

VIII. AFFORDABILITY STATUS OF THE BELOW POVERTY LINE URBAN POPULATION (2008)

1. As per the recommendations of the task force, [1] appointed by the ministry of Housing and Urban Poverty Alleviation, also referred to as the Deepak Parekh Committee Report (DPC), the affordability standards for various income groups have been evolved.

2. For the Economically Weaker Sections, (EWS) and the Lower Income Group (LIG) categories of households: A unit with a carpet area between 300 and 600 sq ft, with the cost not exceeding four times the household gross annual income and the EMI/rent not exceeding 30 per cent of the household's gross monthly income with a Household size of 5 members has been assumed.

Table 7: Affordability vs. Adequacy Trade-offs

Key parameters for assessing affordability (a)	Negotiable (b)	Non-Negotiable (c)	Negotiable With a Ceiling (d)	Negotiable with a Floor (e)
1 Material choice Cost				
2 Structural Safety				
3 Durability				
4 Size of the house (Minimum)				
5 Unit Cost of Construction				
6 Number of rooms				
7 Labour cost				
8 Maintenance Cost				
9 Interest on loan				
10 Loan processing fee				
11 Registration Fee + Stamp Duty				
12 Taxes + User Charges				
13 Travel Location				
14 Land Size cost				

V.

IX, AFFORDABILITY VS. ADEQUACY TRADE-OFFS

1. In an attempt to provide a Pucca (Permanent) house out of conventional materials, those parameters have been identified where adequacy has been or is in danger of being traded off for affordability. To ensure safety, security, privacy, stability and durability, these parameters have been categorised into negotiable, non-negotiable, negotiable with either a ceiling or floor as the case may be.

2. The effort has been to fix constants and variables so that reaching a reasonably acceptable solution becomes not only easier, but also acts as a template for faster movement of papers for affordable housing.

Table 8: Affordability vs. Adequacy Resolution through an Iterative Process

Key parameters for assessing affordability (a)	Negotiable Through Design (b)	Non-Negotiable (c)	Negotiable With a Ceiling (d)	Negotiable with a Floor (e)	Resultant Package - Guideline for design of an affordable house.
1 Material choice Cost	70% of Total Cost				70% of Total Cost
2 Structural Safety		3			3
3 Durability		50 years			50 years
4 Size of the DU (Minimum)				450 Sq.Ft	450 Sq.Ft
5 Unit Cost of Construction			Rs.300 per Sq.Ft.		Rs.300 per Sq.Ft.
6 Number of rooms				1BHK	1BHK
7 Labour cost	30% of Total Cost				30% of Total Cost
8 Maintenance Cost			Equal to 2 EMIs/Rent per Annum		Equal to 2 EMIs/Rent per Annum
9 Interest on loan			Subsidised @ 5% Static rate		Subsidised @ 5% Static rate
10 Loan processing fee			5 % of EMI		5 % of EMI
11 Registration Fee Stamp duty etc			5 % of EMI		5 % of EMI
12 Taxes + User Charges p.a			1% of Total Cost		1% of Total Cost
13 Travel Location			Within 2Km radius of Present Location		Within 2Km radius of Present Location
14 Land Size cost			700 Sq. Ft. Free		700 Sq. Ft. Free

IX CONCLUSIONS

A. A Housing Package for the Urban Poor

1. At current Market Rates an affordable house for the Below Poverty Line household, Using the variables and constants arrived at through iteration would mean:

2. A 450 Sq. Ft (minimum built- up area), 1BHK house, on a 700 Sq.Ft (Free) plot of land, located within 2Km of the current house, costing Rs. 1,35,000/, (at Current material and labour Costs- 2013) using 70%= Rs. 94,500 material cost, Rs 40,000/- Labour Cost is to be designed iteratively.

3. With 90% of Rs. 1, 35,000 = (Rs. 1, 21,500) loan facility, 10% of Rs. 1, 35,000 = (Rs. 13,500) own Contribution, subsidized simple interest @ 5%, Rs.1, 21, 500) spread over a minimum of 20 years, shall have an EMI= Rent = Rs. 530 (Using Consumer Pricing Index and Rental Equivalence Method).

4.The House to be designed for minimum 50 years of life span, and a structural design that offers a minimum factor of safety = 3. It must have all toilet and electrical fixtures, fittings, built-in storage units, doors windows grills, hard ware items like latches, stays, door locks, al-drops and general specifications like terrazzo tiles, glazed tiles wherever appropriate. Water, sanitation and plumbing, is to be fixed at basic level.

The Maintenance Cost envisaged to be fixed at an average of Rs.1060 p.a. One Time Charges like Loan processing fee not to exceed Rs. 265 and Registration Fee Stamp duty etc. another Rs. 265. For the Taxes + User Charges an amount not exceeding Rs. 1350 p.a

Table 9: Reverse Analysis

One Time Costs (Rs.)	Gross Monthly Costs, (Rs.)	Total Monthly outgoings 0-19 years after one time payments	Total Monthly outgoings after 19 th year
Own Contribution 13,500 + Loan processing fee 265 + Registration Fee Stamp duty 265.	EMI 530 + Maintenance 1,060 /12 = 88 + Taxes & User Charges 1,350/12 = 113	731	201
Total =14,030	Total = 731		

5. Using the Iterative Model of Analysis after having fixed floors and ceilings for Semi-Negotiable Parameters and established Non Negotiable, the only two parameters that can be worked upon through design are the material and labour costs.

6. With the current iterative values the Total Cost is equal to Rs. 1, 35,000. The house hold will however have to pay Rs. 14,030 + (731x 20 years x 12 months) for 20 years which amounts to a static value of Rs. 1, 89,470

7. If 5% of the combined annual household income is Rs.734x12 (Rs.8808) then the annual income is equal to 8808/0.05 which is

equal to Rs. 1, 76,160. One twelfth of this amount which is Rs. 14,680 is therefore the monthly income required, to be able to pay the EMIs or the Rent.

8. By using a structural system out of Bamboo Reinforced Concrete (BRC), for its slab, beams and columns (to begin with) a house can be designed fitting the criteria evolved for a given size, cost, safety and durability acceptable for a decent habitat. Further iteration may be required either for reworking semi-negotiable parameters within their range, or by iterating upwards or downwards with finishing materials, replacing one item at a time with bamboo (Doors, windows, flooring), and testing their effect on costs

X. BAMBOO FITS THE BILL

The use of bamboo has historical roots. Its durability, tensile strength, owing to its fibrous structure is undoubtedly acknowledged in research circles. The excellent regenerating qualities and fast growth make it an abundantly available material in bamboo favourable soil conditions across the world. Bamboo cultivation, cutting, drying, seasoning, and chemical treatment, if managed in consonance with its flowering, can yield bulk quantities, for construction. While whole bamboo construction is known to have a list of demerits, engineered or processed composites enhance its qualities and increase its strength, multi-fold.

Simultaneously, various steps need to be taken right from cultivation to design, to construction and maintenance help in countering most of its limitations, and harnessing its potential as a low cost building material. Being an organic material, it is by far, the most, sustainable solution for mass housing, for the economically weaker sections of the society in urban areas, including those that struggle to survive at sub-sustenance level, referred to in India as those that are Below Poverty Line (BPL) with meagre incomes. Bamboo being hollow offers a very light superstructure, reducing foundation costs, and an excellent performer in seismic regions, a minimiser of losses to lives and properties. They say it needs protection from driving rain. Hence designing with bamboo, calls for a large hat and big pair of boots for its protection, in real terms, an overhanging roof and a protected foundation.

Availability of the conventional materials and technology, and standardization of professional education in the field of science, engineering and technology, led to the invasion of conventionalism, not only in the building industry, but also in every sphere of life. Generations of professionals developed similar skills, inherited similar technical thought processes, leaving no room for breakaways and experimentation. Closed laboratory experimentation continued, on alternative building materials and technology, but remained indoors, as the society had fortified itself to think non-conventionally. The "traditional" and the "vernacular" were lost in transition from the being" a way of life" to becoming an "impossibility". There was just no

one left to experiment and embrace research outcomes.

The energy guzzling construction of the modern times, has gripped the society, so much so that the poverty stricken prefer to (or are compelled to), remain homeless or operate out of houses which are often crowned with precariously balanced leaking shanty roofs a constant threat to life and property, constructed on an unauthorized piece of land - to having a semi-permanent structure for a house, out of alternative materials, which were ready for market penetration, yet unanimously rejected by the populace.

Or was it the soaring prices of cement, bricks, steel and timber? Was it a default situation or an artificially created one, as a result of urbanization, where the family is multi-nucleated, and dispersed, such that it now requires multiple establishments?

REFERENCES

[1] Presentation of the report of the task force (Deepak Parekh Report - DPC) on affordable housing for all documents Members of the committee: Public Document

[2] Cover Story-Feb09.qxp 24/01/2009 CMYK 86 CONSTRUCTION WORLD FEBRUARY 2009 Affordable Housing needs a Revolution www.ConstructionWorld.in Public Document

[3] Affordable Housing for Urban Poor National Resource Centre SPA, New Delhi Supported by Ministry of Housing & Urban Poverty Alleviation Government of India July 2009, Paper by Dr. Kiran Wadhwa Chief Economist (Retd), HUDCO New Delhi Prepared By National Resource Centre (Est. by Ministry of Housing & Urban Poverty Alleviation, Government of India), Dr. Neelima Risbud Co-coordinator, NRC & Professor of Housing, SPA n.risbud@gmail.com Narender Kumar Senior Research Fellow, NRC narender78@yahoo.co.in

[4] National Urban Housing and Habitat Policy of 2007- Public Document, by Ministry of Housing & Urban Poverty Alleviation, Government of India)

[5] Interview and talks with Prof. Sudhakar Puttagunta, IIT, New Delhi.

ACKNOWLEDGMENT

F.A. Author thanks her Supervisors and Co- Authors, S.B. Dr M.V.Latkar and T.C. Prof. Utpal Sharma for their valuable inputs from time to time. F.A. Author would specially like to thank the Members of the Research and Consultancy cell of the Visvesvaraya National Institute of Technology currently, Chaired by Dr. H.M. Suryavanshi (Dean - Research and Consultancy, Professor at the Department of Electrical Engineering, V.N.I.T.), along with the members Dr. Rajesh Gupta (Dean Planning and Development and Professor at the Department of Civil Engineering), Dr. D.H. Lataye (Associate Professor at the Department of Civil Engineering, V.N.I.T. Nagpur), for their unstinted guidance and reviews during the six- monthly seminars as part of course work.

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