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The Role of Self-Help Housing in Low-Cost Shelter Programmes for the Third World

MICHAEL BAMBERGER

Evaluation of several World Bank projects shows that the inclusion of both upgrading and sites-and-services projects in national housing programmes can prove a more efficient solution to urban housing shortages than any traditional approach to housing.

1. Introduction

Third World governments are frequently faced with the fact that 40 per cent or more of their urban population lives in what is considered to be substandard housing (Grimes, 1976). Although the definition of 'substandard' varies from country to country and can include everything from well-constructed middle-income housing which has been built in contravention of certain planning regulations, to a cardboard shack built in a swamp, in developing cities most 'substandard' housing does suffer from serious defects in terms of access to services, security of tenure or quality of construction. The problem is further complicated by the very low incomes of most (but not all) of the families living in these dwellings.

During the early 1970s it became increasingly clear that it was beyond the financial resources of all but a handful of developing countries to solve a problem of this magnitude through traditional 'low-cost' housing programmes. Despite the apparently strong evidence on the need to find new and more economical approaches, many 'low-income' housing policies continue to be based on the provision of traditional high-rise or single-family units, which may be unaffordable to as much as 50 per cent of the urban population.

The search for innovative and more economical approaches has often met with opposition from politicians (who prefer to provide a few high-standard units with the promise that everyone will ultimately receive a house of this quality); from Western educated architects and urban planners (who wish to apply Western standards and designs) and from local authorities (concerned about health risks and the perpetuation of slums if standards are lowered). Roger England (1980) illustrates how, in the case of Nairobi, the attempt to maintain unrealistically high health standards delayed project completion by several years. A similar example can be cited from El Salvador. When the Salvadorean Foundation for Low-Cost Housing (FSDVM) was planning its first major sites-and-services projects in 1974 for households with incomes around US $50 a month, planning authorities initially required that each house should be provided with its own parking

space, and that water and sewage lines should be of sufficient size and depth to withstand heavy vehicular traffic! Although the success of the first projects has convinced planning authorities to lower standards, planning norms still require all units to have piped water and water-borne sanitation in each unit (which contributes to the project still being unaffordable to the poorest 20 per cent of the urban population).

In the early 1970s the World Bank began to finance projects to develop more realistic and affordable approaches to urban shelter. The traditional approaches of providing completed units were replaced by 'self-help' projects in which beneficiaries were able to complete the unit with their own resources, and often using their own designs. Two main approaches were used: upgrading of existing squatter communities through the provision of services and the rationalization of house and street layout; and the provision of serviced sites, sometimes with a partially completed unit, where the beneficiary is responsible for building or completing the unit. Closely related to self-help is the concept of progressive development whereby families can build at a pace and to a standard consistent with their needs and financial resources. Since the first sites and services project in Dakar, Senegal in 1972, the World Bank had provided (to 1981) loans to the value of $2014 million to support sixty-two low-income housing projects in thirty-five countries. It is estimated these projects have benefited 1.5 million households and nine million people.

In 1975 an agreement was reached between the International Development Research Centre (IDRC) in Ottawa, and the World Bank to jointly support a five-year evaluation of three (and later four) of the first Bank financed urban shelter projects. This paper presents some of the findings of this evaluation with respect to lessons which have been learned about the potential value of these approaches in the provision of shelter which is affordable to the urban poor. It is important to keep in mind that the evaluation only covered four of the earliest projects and did not study any of the more recent projects which have presumably learned from the lessons of the first projects.

Section 2 provides a brief description of the types of projects being studied. Section 3 compares the projects to traditional low-cost housing in terms of their costs and accessibility to the low-income population. Section 4 then discusses some of the most interesting design innovations and the concluding section suggests some lessons for future housing policies in developing cities.

2. Brief Description of the Projects Being Studied

The evaluation covered projects in El Salvador, Zambia, Senegal and the Philippines. The El Salvador project involved the provision of 7000 serviced sites in five main cities. All sites had individual connections for water and water-borne sanitation. Plots had an average of about 75 m^2 although experimentation is underway with smaller plots in inner-city locations. Participating households were required to work together in mutual-help construction groups up to the completion of a habitable core unit. Most families then continued to extend and improve the house with their own resources. Figure 1 shows a typical serviced lot at the level of development at which it would be received by the household. Most of the above ground construction seen in the photograph was built by the future owners through mutual-help construction groups. Figure 2 shows the type of *tugurio* (squatter settlement) in which many of the project participants had previously lived.

The Lusaka (Zambia) project involved the upgrading of squatter areas, occupied by 17,000 households, through the provision of roads, communal standpipes and security lighting; and the provision of serviced plots

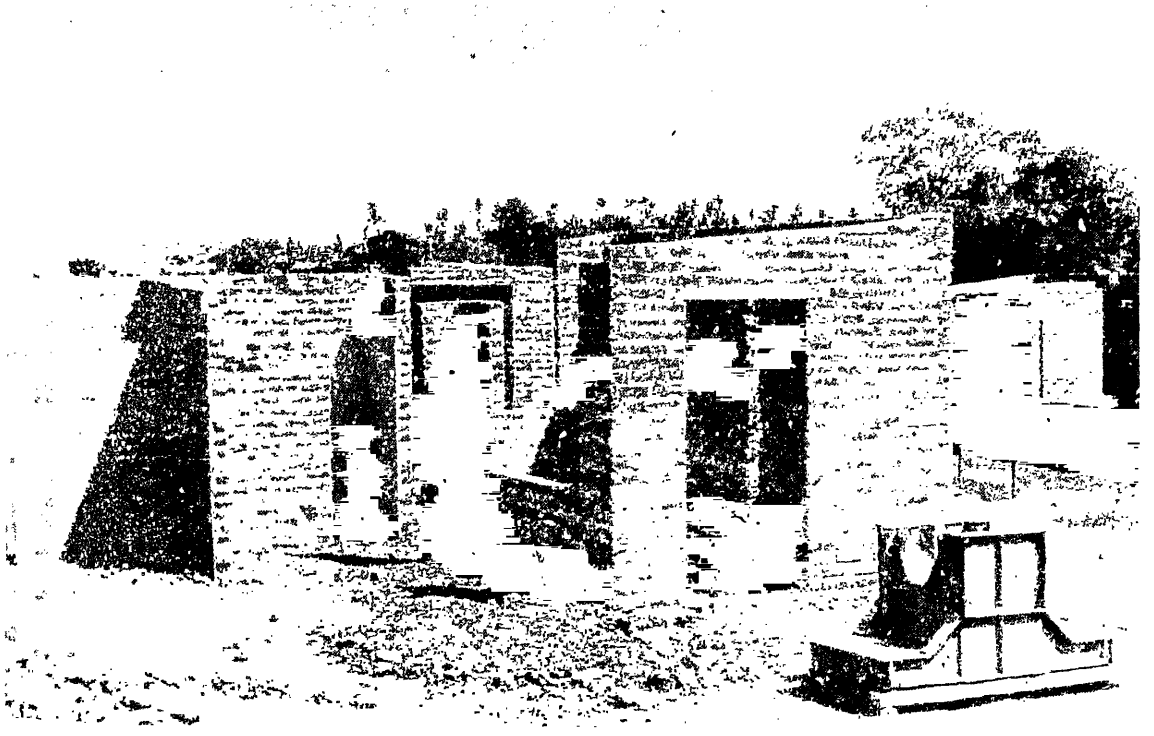


Figure 1. Sites-and-Services Project of the Salvadorean Foundation for Low Cost Housing (Santa Ana, El Salvador). The picture shows the level of development when the unit is sold to the project participants. Most of the above ground construction to this point has been built by participants working in mutual-help groups. In the foreground is a block-making machine which particpants could rent. (Photo: Bamberger)

for a further 11,000 households. Average plot sizes varied from a minimum of 134 m^2 in squatter upgrading to about 320 m^2 in the sites-and-service project areas. The serviced plots were intended to serve a relatively wide income range and varied considerably in their level of servicing and costs. Although some mutual-help activities were included on some communal facilities such as communal ditch digging, households built or upgraded their houses using self-help. As in the case of El Salvador, loans were provided for the purchase of materials from a material store.

The Senegal project was initially planned to provide 17,000 serviced plots on one site on the periphery of Dakar. The number of plots was later reduced. Families could choose between various levels of services, including the choice between individual and communal water supply. Loans were again available for the purchase of building materials. All construction was through self-help although the project provided help to households in the selection of building contractors.

The Philippines project involved the upgrading of the Tondo Foreshore, the largest squatter area of Manila with an estimated population of over 150,000; and the provision of serviced sites, also in Manila. The Tondo project was planned on a communal basis, with each block deciding on the level of 'reblocking' (moving of units to make way for roads and services), but each household was responsible for the remodelling of its own house. In the sites-and-services area all construction was done through individual self-help. Due to the very high densities of Tondo, average plot

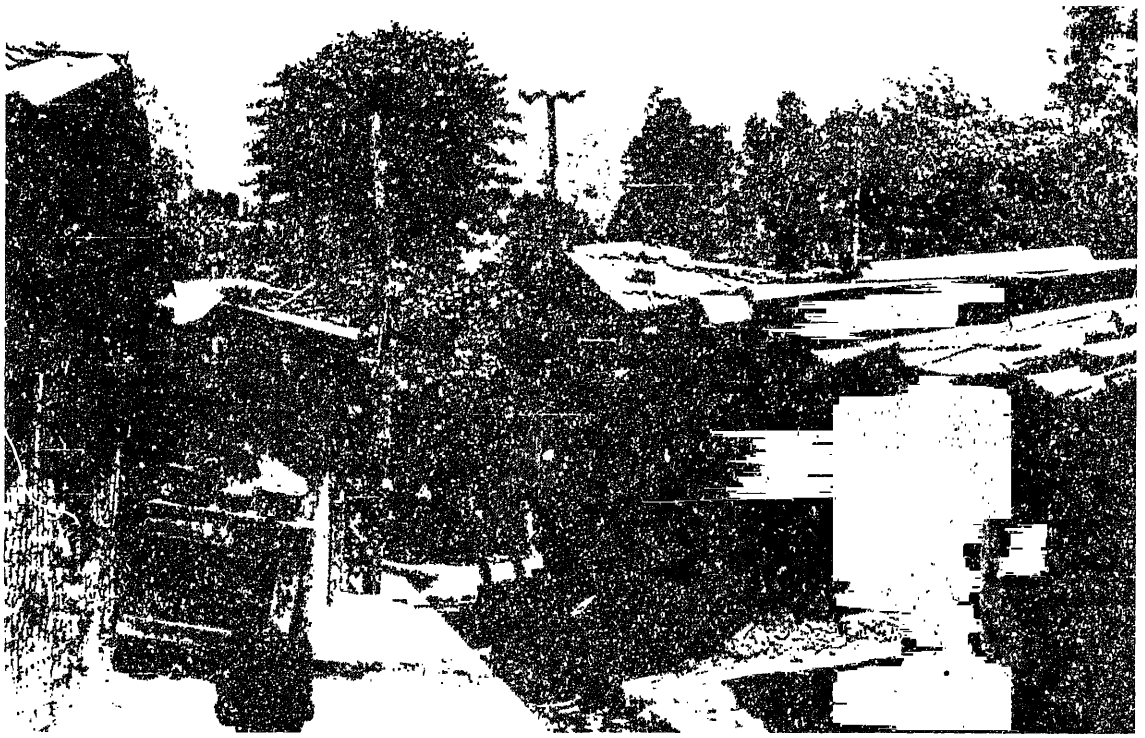


Figure 2. Typical *tugurio* (squatter settlement) in San Salvador, El Salvador. Waste materials flow through the open channel in the centre. Electricity is stolen and eating utensils are washed in the street (left). (Photo: Bamberger)

Figure 3. Tondo Foreshore Upgrading Project, Manila, Philippines. The second storey brick unit is built on top of the poorer quality original unit which is still occupied by the family. (Photo: Kaufmann)

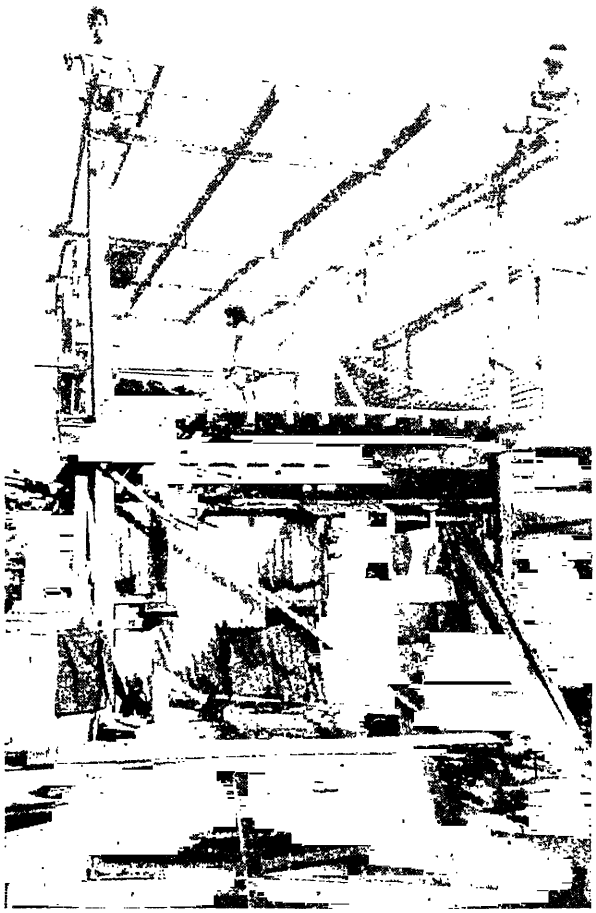


Figure 4. Tondo Foreshore Upgrading Project, Manila, Philippines. A wooden-framed second storey is being constructed above the existing unit which was made of waste materials. Construction is often done by members of the extended kinship group who usually receive no direct monetary payment. (Photo: Kaufmann)

sizes after reblocking were less than 50 m^2. High proportions of families built a second and even a third storey so as to maximize the use of their limited plot areas. Figures 3 and 4 show two examples of the addition of a second storey. In both cases the second storey is being built on to an existing (and poorer quality) first storey.

3. Comparison with Traditional Public Housing in Terms of Cost and Accessibility.

Both sites-and-services and squatter upgrading projects have proved accessible to much lower income groups than traditional low-cost housing programmes. Table 1 presents a comparison from El Salvador of the lowest urban income percentile who could afford each of the main housing options available in the formal and informal housing market. None of the traditional public housing programmes were accessible below the 48th income percentile and many did not reach below the 60th percentile. On the other hand the FSDVM sites-and-services project was accessible to families as low as the 24th percentile. Although the precise figures vary from country to country, it seems that well-organized sites-and-services projects are able to provide adequate housing to as much as 20 or 30 per cent of urban households who cannot afford other public housing programmes.

Squatter upgrading programmes usually reach even lower down the income scale

Table 1. Lowest urban income percentile to which Salvadorean Low-cost Housing Foundation (FSDVM) and formal and informal housing programmes are accessible in El Salvador.

Institution	*Type of Housing*	*Lowest percentile who can afford this option*
Tenement housing (*mesones*)	Poorest quality	6
Extra-legal subdivisions (*colonia ilegal*)	Poorest quality	10
FSDVM	Basic core unit	24
Tenement Housing	Adequate quality	24
IVU (Instituto de Vivienda Urbana)	Marginal housing in squatter areas (discontinued)	27
Extra-legal subdivisions	Adequate standard	42
FSV (Fondo Social para la Vivienda)	Normal programme (1975–1978)	48
IVU	2-bedroomed houses	52
IVU	4-bedroomed houses	Beyond 60th percentile
IVU	Apartments	Beyond 60th percentile
FSV	Normal programme (1978–1982)	Beyond 60th percentile

Source: Richard and Bamberger (1977), Table 2.15.

than sites-and-services, due to the fact that their level of intervention and hence cost is usually lower. In Zambia, for example, almost 60 per cent of families in the upgrading areas had incomes which placed them in the lowest 20 per cent of the urban income distribution (Bamberger, Sanyal and Valverde, 1982). However, the studies also showed that the income distribution in many squatter areas is not as different from sites-and-services as had been expected. This can be seen in table 1, where the poorest illegal subdivisions in El Salvador reach as low as the 10th income percentile, but at the same time there are many other illegal or quasi-legal areas only affordable to households above the 40th percentile (where income levels are comparable or higher than those of the average families in the FSDVM sites-and-services projects). This is due to the housing deficits in most developing cities which make many middle-income families willing to accept lower service levels in return for a central location. One consequence of this higher than expected income in squatter upgrading projects has been a very high rate of investment and housing consolidation.

Several important lessons have been learned about project affordability. Firstly, traditional assumptions about families only being willing, or able, to spend up to about 25 per cent of their monthly income on housing, have proved to significantly underestimate willingness to pay. Many families have been willing to spend up to 40 per cent of their income on housing. Secondly, many of the poorer households receive substantial income transfers from their extended families to help cover monthly housing payments and the costs of house construction. Evidence both from El Salvador and the Philippines suggests that income transfers are one of the main sources of household income for low-income households, and that furthermore relatives often appear willing to increase these payments to help build a house (Kaufmann, 1981).

Thirdly, and perhaps most importantly for future housing policies, it is clear that many families perceive improved housing as an investment as well as a consumption good, and for this reason are willing to invest larger than expected amounts in the building or upgrading of their house. A clear indication of the investment motive is the high proportion of households who

sublet part of the structure. For example, in the first sites-and-services project in Kenya it was estimated that perhaps 80 per cent of structures contained renters. In Zambia, where the concept of 'landlordism' was discouraged, only 14 per cent of households declared (the real proportion was probably higher) that they were subletting part of the house. However, despite the official disapproval of renting in Zambia, many families preferred to invest in more expensive cement blocks rather than sun-dried earth blocks as they believed it would be possible to recoup the investment by the higher rents which could potentially be charged for a better quality room.

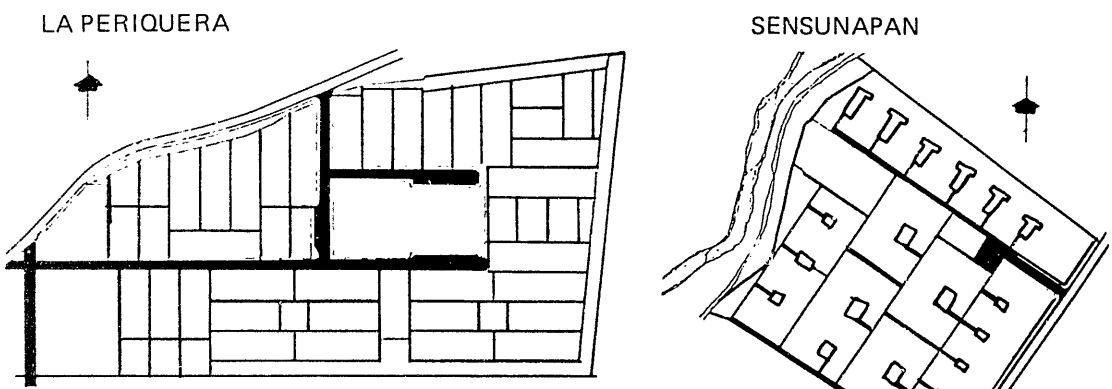
4. Some Design Innovations of Progressive Development Projects

Considerable effort has been put into research and evaluation of new methods of design and construction in an effort to reduce costs and increase quality. Some of these innovations are presented in the following paragraphs. Not all methods have been used in every project but the examples given are illustrative of the general approaches to the problem of providing more economical shelter options.

Design Innovations

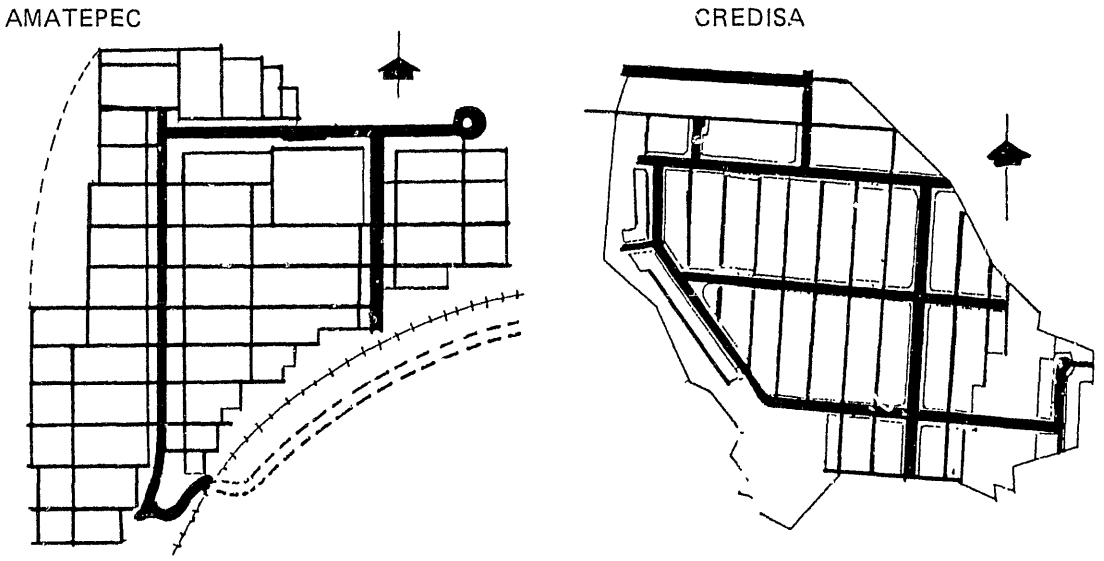
1. *Reducing Impact of Land Values on Project Costs*

In many cities one of the major cost elements is the price of land. Land represents a higher proportion of total project cost in a low-cost housing project than in traditional housing projects due to the fact that the former provides less construction. For example land represented 18 per cent of the total cost of a centrally located FSDVM project in San Salvador, as opposed to only 1 per cent and 6 per cent of the price of two middle-income housing projects in similar locations. A number of methods have been used to reduce the impact of increasing land prices.



Percentage land used for		
circulation	18.7%	10%
pedestrians	13.1%	9%
vehicles	5%	0.8%

Figure 5(a). Vehicular and pedestrian circulation patterns in two typical FSDVM projects. In both projects a relatively low proportion of land is used for circulation and most of this is for pedestrians. Many houses do not have direct access to vehicular roads and may have to walk several hundred metres to reach one.
(*Source:* FSDVM (undated) *Evaluacion de proyectos habitacionales en El Salvador.*)



Percentage land used for		
circulation	27.5%	24.1%
pedestrians	20.6%	14.2%
vehicle	9.2%	6.9%

Figure 5(b) Vehicular and pedestrian circulation patterns in two typical public sector housing projects in San Salvador. In both projects a high proportion of land is used for vehicular and pedestrian circulation to ensure that all houses are as near as possible to vehicular networks.
(*Source:* FSDVM (undated) *Evaluacion de proyectos habitacionales en El Salvador.*)

(a) *Efficient land use*

The proportion of saleable land has gradually been increased. Table 2 shows that in early FSDVM projects in El Salvador 50 per cent or less of the total land area was sold, whilst in more recent projects this proportion was consistently over 60 per cent and in some cases almost reached 70 per cent. It can also be seen that this proportion was much higher than for most public housing programmes. One of the main ways in which this has been achieved is by reducing the amount of land used for vehicular roads. In most projects not all houses have direct access on to a vehicular road. Considerable cost savings are possible in this way as very few households have private cars. People are used to walking considerable distances so the walk of 100 metres or so to a road is not considered to be a major inconvenience. Figures 5(a) and 5(b) compare the design of vehicular networks in two typical public housing projects in El Salvador with two of the FSDVM projects. It can be seen the proportions are much lower in the FSDVM projects.

(b) *Smaller plot sizes*

It has been found that many families will accept much smaller plot sizes than had been expected. The actual sizes vary according to the size of the city and existing population densities but plot sizes of less than 50 m^2 have proved acceptable in Manila and El Salvador, whilst the acceptable minimum in Lusaka appears to be about 120 m^2 (population densities are very much lower in East Africa). There is evidence that families are prepared to make trade-offs between location and plot size. In most cities some families are prepared to pay relatively high rents for small rooms with a central location whereas others prefer to spend more time travelling in order to have

Table 2. Comparisons of Design Efficiency of Salvadorean Low-Cost Housing Foundation (FSDVM) and public low- and medium-cost housing programmes in El Salvador.

	FSDVM Projects						
Year	1972	1974	1975	1975	1977	1978	
Institution	FSDVM	FSDVM	FSDVM	FSDVM	FSDVM	FSDVM	
Project	SJP	PEP	PER	SEN	PRE	CON	
Indicator							*Unit*
Sales area	48	50	59	66	69	62	% of project
Public areas	51	49	40	333	31	38	% of project
Communal areas	22	21	21	23	17	23	% of project
Circulation	29	28	19	10	14	15	% of project
Lots	77	79	81	64	78	40	lots/hectare
Units	77	80	83	69	82	140	units/hectare
Circulation network	664	580	511	289	407	547	metres/hectare
Vehicular network	68	32	65	11	47	22	metres/hectare
Pedestrian network	597	547	445	289	360	525	metres/hectare
Solid waste disposal pipe	7.9	6.0	4.2	4.1	4.0	5.4	metres/unit
Drinking water pipe	6.5	5.4	4.6	4.2	4.0	3.1	metres/unit
Construction as proportion of total cost	69	31	45	37	40	50	% of total cost
Sales price	2018	2510	3484	2900	3912	4058	

	Public Housing Projects						
Year	1968	1967	1977	1973	1977	1977	
Institution	IVU	IVU	FSV	FSV	FSV	FNV	
Project	AMA	ZAC*	OCT*	CRED	SJF	JSC	
Indicator							*Unit*
Sales area	62	15	21	60	49	38	% of project
Public areas	37	85	79	39	51	62	% of project
Communal areas	10	65	67	15	11	32	% of project
Circulation	27	19	12	23	40	30	% of project
Lots	92	—	—	41	56	—	lots/hectare
Units	92	94	55	41	85	86	units/hectare
Circulation network	704	463	376	452	611	690	metres/hectare
Vehicular network	96	60	66	107	99	83	metres/hectare
Pedestrian network	608	403	310	344	512	607	metres/hectare
Solid waste disposal pipe	4.9	2.9	9.2	5.5	8.2	8.8	metres/unit
Drinking water pipe	5.4	3.2	9.2	5.6	8.2	9.9	metres/unit
Construction as proportion of total cost	58	71	60	68	60	79	% of total cost
Sales price	4002	7000	15000	8763	9800	21950	

Key: FSDVM projects: SJP (San Jose del Pino), PEP (El Pepeto) PER (La Periquera), SEN (Senunapan),
PRE (La Presita), CON (Conacaste).

Government projects: IVU (Instituto de Vivienda Urbana) AMA (Amatepec) ZAC (Zacamil*) OCT (8 family blocks*) FSV (Fondo Social para la Vivienda) CRED (Cludad Credisa),
SJF (San Jose de Las Flores) FNV (Financiera Nacional de la Vivienda)
*=multi-storey

a larger plot on the periphery. In many cities the small plot sizes have met with considerable opposition from local politicians and government agencies but they seem to be acceptable to the target population. As is to be expected the reduced plot sizes significantly reduce per unit costs.

(c) *Vertical construction*
In areas with high land densities, an important innovation has been vertical construction. In the Tondo project in Manila one effect of the project was to increase the average number of storeys from 1.49 to 1.66 (figures 3 and 4 illustrate the process of vertical construction). In El Salvador experimentation has begun with two-storey units, thus enabling plot sizes to be reduced from about 70 m^2 to a little over 40 m^2. As can be seen from table 2 this permitted the construction of 140 units per hectare whereas no other project studied had more than 92.

(d) *Reducing lot frontage*
Redesigning the shape of the plot has made it possible to reduce the frontage and hence the cost of installing water and sewage pipes and other services.

2. *Use of Squatter Upgrading*

The upgrading of existing squatter settlements through the provision of services and sometimes the realignment of dwellings has the advantage that it can affect much larger numbers of households and at a much lower unit cost. An important finding of the research is that households are willing to invest considerable amounts of their own resources once security of tenure has been obtained and the basic public services provided. Providing these basic service stimulates families to invest their own resources in improvements to the house and hence a considerable multiplier effect is achieved. This has made it possible for housing authorities to reduce the per capita investment and hence to reach larger numbers of households. Thus whilst sites-and-service projects rarely reach more than 10 per cent of the urban population, it is possible for upgrading to have some impact on more than half of a city's population.

Squatter upgrading has proved to be surprisingly successful in many countries, and residents have been willing to cooperate to improve the physical and social environment in which they live. One of the reasons for the positive response is that, contrary to the popular image, many squatter areas are very dynamic and contain significant proportions of families with both the motivation and resources to respond to the investment opportunities provided by the physical improvements. This gives support to the ideas of writers such as Turner (1968) and Mangin (1967) who have argued that low-income housing programmes should channel the dynamism and resources of the squatters themselves rather than trying to impose solutions from above.

Innovative Approaches to Construction

Through their reliance on progressive development and self-help construction the projects have developed a number of new approaches to the construction of houses and the provision and maintenance of services. Some of these methods are described below.

(a) *Self-help construction*
A central premise of most projects is that the family is responsible for the construction of all, or at least part, of the house. It was assumed that most families would actually build the house using their own labour, but it has been found in many countries that the majority of families employ hired labour for at least part of the construction process. Although many government agencies were concerned that families would not have the necessary construction skills, in fact it has been found that most

families either have worked, or have a close relative who has worked, in the construction industry. Consequently families have been able to build houses of a higher value and quality than had been expected. The use of self-help appears to have reduced costs both because families contribute their own labour or obtain labour from relatives or friends at below market costs, and because they are often able to acquire cheaper building materials. In El Salvador it was found that families were able to save up to 30 per cent by obtaining new materials at a discount or by using quality second-hand materials (for example slightly rusted metal window bars which are as good as new after sanding and painting) (Bamberger, Gonzalez Polio and Sae-Hau, 1982).

(b) *Mutual-help construction*

In El Salvador participation in mutual-help construction was a requirement for acceptance to the project. In other countries, mutual-help was a voluntary option. Although perhaps difficult to replicate in the same way in other projects, the experience of El Salvador suggests that mutual-help construction has a number of advantages. One advantage is that it eliminates the requirement for a 10 per cent downpayment which is often a barrier to participation of many poorer households. In one FSDVM project 75 per cent of the participants said they would not have been able to afford the project if they had had to pay the downpayment in cash rather than providing it in the form of 'sweat equity'. Mutual-help is also a useful medium through which to teach building skills which the household can then use on the completion of their house. Although difficult to evaluate, the FSDVM believes that the organizational skills learned during the mutual-help phase have contributed to the high level of community participation in project maintenance and also to the fact that the FSDVM has one of the best cost recovery records of any World Bank financed shelter project. However, mutual-help proved less successful in Zambia and was not used directly in the Philippines or Senegal.

(c) *Progressive development*

Another central concept of the construction process was the use of progressive development, by which each family is able to complete the construction of their house in the way they wish, using the materials and design of their preference and normally with no required time by which the construction must be completed. This has meant that projects have been able to provide shelter to both the poorest households who can only build a very simple house, and to better-off families who are able to mobilize the resources to build very impressive houses. Progressive development is particularly important in most Third World cities where the economic fortunes of households are subject to violent fluctuations.

Constructions can be delayed during periods of economic hardship and when conditions improve the house can be completed. The fact that there is no requirement to terminate construction by a certain date means that families can save to build a good quality house over a period of years rather than being forced to complete the construction within a certain period and hence having to use inferior materials. Progressive development has also meant that families will often construct extra space which can be sublet.

(d) *Use of self-made materials*

Several projects have experimented with the use of self-made building materials. Although these materials have been less widely used than expected, they have proved useful to some of the poorer households as a way to reduce costs. This has proved, however, to have been less important than had been expected largely because there are a number of disguised costs and

problems involved in the making and use of building materials. A first problem is that the quality of these materials has often been inferior. The quality of sun-dried bricks, for example, varies considerably according to the local soil conditions, and the possibility of using mixtures of earth and stone again depends on the existence of the stone in different areas. Many of these materials are also very labour intensive, and households have less free time available than had been expected. If labour has to be hired to make the materials then much of the cost advantage vanishes.

5. Conclusions

Despite inevitable problems, in general the experience of both upgrading and sites-and-services projects has been positive and has proved the feasibility of producing, on a large-scale, housing which is affordable by and acceptable to the approximately 50 per cent of the urban population who previously did not have access to any of the public housing programmes. The following conclusions can be drawn from this experience:

(a) Both sites-and-services and squatter upgrading are affordable to large sectors of the low-income urban population who did not previously have access to any form of public housing.

(b) Most households have the necessary construction and organizational skills to ensure the production of good quality housing through the use of self-help.

(c) Progressive development, through which households can build at their own pace and according to their own design, is an important component in ensuring that families with low and fluctuating income are able to construct reasonably adequate housing.

(d) If government is able to provide the basic services and provide security of tenure, families are prepared to generate most of the investment to finance the upgrading of the house. In this way progressive development projects suggest a way in which significant improvements can be obtained in the quality and quantity of low-cost housing at a very low cost to the government.

When taken together there is a very strong case for including both upgrading and sites-and-services projects in most national housing programmes. Both in terms of quality and cost they can provide more efficient methods for combatting the urban housing deficit than any of the traditional approaches to housing.

REFERENCES

Bamberger, M, Gonzalez-Polio, E. and Sae-Hau, U. (1982) *Evaluation of sites and service projects: the evidence from El Salvador*. World Bank Staff Working Paper No. 549, Washington D.C.

Bamberger, M., Sanyal, B. and Valverde, N. (1982) Evaluation of sites and service projects: the experience from Lusaka, Zambia. World Bank Staff Working Paper No. 548, Washington D.C.

England, R. (1981). Water Decade: Legislation prevents progress. *Consulting Engineer*.

Grimes, O. (1976) *Housing for Low-Income Urban Families: Economics and Policy in the Developing World*. Baltimore: Johns Hopkins University Press.

Kaufmann, D. (1981) Social interactions as a strategy of survival among the urban poor: A theory and some evidence. Doctoral Dissertation. University of Harvard.

Mangin, W. (1967) Latin American squatter settlements: a problem and a solution. *Latin American Research Review*, **2**(3) pp. 65–98.

Richard, J. and Bamberger, M. (1977) Economic Evaluation of Sites and Services Programs and their Accessibility to Low-Income Groups in El Salvador, FSDVM Report Series on the Evaluation Program.

Turner, J. (1968) Uncontrolled urban settlement: problems and policies. *International Social Development Review*, **1**, pp. 107–30.

NOTE

At the time this article was written the author worked in the Urban and Regional Economics Division of the World Bank and was responsible for the coordination of the evaluation referred to in the article. The views expressed in the article are those of the author and should not be interpreted as representing the views of the World Bank or any of its affiliated organizations.

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